Understanding vulvar vestibulitis syndrome through pain measurement: Applications of multidimensional pain methodologies and development of novel assessment techniques

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Abstract

Vulvar vestibulitis syndrome is a highly prevalent and underinvestigated pain syndrome. It is believed to be the most common form of dyspareunia, or painful intercourse, in pre-menopausal women. Despite the fact that pain is its defining characteristic, its conceptualization as a sexual dysfunction remains the predominant view. The first chapter of this thesis reviews support for a re-conceptualization of vulvar vestibulitis as a pain disorder, and contends that the pain component must be measured as it is in chronic pain patients, both objectively and subjectively. This paper is followed by a study in which tactile and pain thresholds in genital and non-genital body areas of 13 women with vulvar vestibulitis syndrome and 13 non-affected women were measured, while data about the intensity and unpleasantness of these sensations were collected. Results indicated that women with vulvar vestibulitis have decreased tactile and pain thresholds in both genital and non-genital body areas, as well as higher unpleasantness ratings in response to painful stimuli than controls, replicating data from the chronic pain literature. The third paper presents a pain conceptualization of vulvar vestibulitis according to classification criteria used by the International Association for the Study of Pain, and introduces the development of a vulvalgesiometer, a standardized method of genital pain measurement. Data collected with the vulvalgesiometer are presented in the fourth paper, a study in which 14 women with vulvar vestibulitis and 14 control women participated. Women with vulvar vestibulitis had significantly lower pain thresholds, higher pain unpleasantness ratings, and used adjectives similar to those reported during intercourse in response to painful stimulation. The vulvalgesiometer was used to elicit

genital tactile and pain sensation in the two groups while brain activation patterns were measured via functional magnetic resonance imaging, the focus of the fifth paper. Results demonstrated that women with vulvar vestibulitis have augmentations of brain activity in the processing of both painful and non-painful genital stimulation as compared with non-affected women. Overall, findings from these studies suggest that the pain of vulvar vestibulitis can be reliably measured and that the pain perspective has important implications for both research and treatment of urogenital pain problems.

Résumé

Malgré le fait que le syndrome de la vestibulite vulvaire est une condition fréquente et la forme de dyspareunie ou de douleur provoqué par les rapports sexuelles la plus courante chez les femmes pré-ménopausées, elle reste sous investiguée. En dépit du fait que la douleur est la principale caractéristique définissant le syndrome de la vestibulite vulvaire, la conceptualisation prédominante de cette condition demeure toujours celle d'une dysfonction sexuelle. Le premier chapitre de cette thèse révise les éléments appuyant la re-conceptualisation du syndrome de la vestibulite vulvaire comme désordre de douleur et argumente que la douleur génitale causée par cette condition devrait être mesurée objectivement et subjectivement comme est présentement effectué pour tout autres désordres de douleur chronique. Ce chapitre est suivi par une étude qui avait pour but de comparer les seuils de sensation et de douleur de 13 femmes souffrant de la vestibulite vulvaire à ceux de 13 femmes non-affectées par des douleurs génitales. Le degré d'intensité et de désagrément provoqués par ces sensations ont également été recueillis et comparés. Les résultats de cette étude ont démontré que les femmes souffrant du syndrome de la vestibulite vulvaire ont un seuil de sensation et de douleur dans la région génitale ainsi que dans d'autres régions corporelles significativement moins élevés que les femmes non-affectées. De plus, les femmes souffrant du syndrome de la vestibulite vulvaire ont trouvé les stimuli douloureux nettement plus désagréables que les femmes faisant partie du groupe contrôle, dupliquant ainsi les données provenant de la littérature sur les douleurs chroniques. Le troisième article présente une taxinomie du syndrome de la vestibulite vulvaire comme désordre de douleur utilisant les critères de classification de l'Association Internationale pour l'Étude de la Douleur. De plus, cet

article introduit le développement du vulvagésimètre, un instrument standardisé mesurant la douleur génitale. Les données cumulées à l'aide du vulvagésimètre et les résultats d'une étude comprenant 14 femmes souffrant du syndrome de la vestibulite vulvaire et 14 femmes contrôles sont présentés dans le quatrième article. Les résultats de l'étude utilisant le vulvagésimètre ont démontré que les femmes souffrant du syndrome de la vestibulite vulvaire avaient un seuil de douleur significativement moins élevé et ont trouvé les stimuli douloureux nettement plus désagréables comparées aux femmes non-affectées de douleur génitale. De plus, elles ont utilisées des adjectifs similaires à ceux reportés pour les sensations douloureuses lors des relations sexuelles avec coït. Le vulvagésimètre a été utilisé pour obtenir des sensations tactiles et douloureuses dans la région génitale chez les deux groupes de femme et ce, pendant que l'activité cérébrale était mesurée à l'aide de l'imagerie par résonance magnétique, soit le sujet abordé par le cinquième article. Les résultats démontrent que les femmes souffrant du syndrome de la vestibulite vulvaire comparées aux femmes non-affectées par des douleurs génitales ont une augmentation de l'activité cérébrale lorsque des stimulations génitales douloureuses et non-douloureuses sont provoquées. En conclusion, les résultats de ces études suggèrent que la douleur causée par le syndrome de la vestibulite vulvaire puisse être mesurée avec fiabilité et que la conception de cette condition comme désordre de douleur a des implications importantes pour l'avancement de la recherche et le développement de traitements pour les conditions urogénitales.

Manuscripts and Authorship*

Candidates have the option of including, as part of the thesis, the text of one or more papers submitted or to be submitted for publication, or the clearly duplicated text of one or more published papers. These texts must be bound as an integral part of the thesis.

If this option is chosen, connecting texts that provide logical bridges between the different papers are mandatory. The thesis must be written in such a way that it is more than a mere collection of manuscripts; in other words, results of a series of papers must be integrated.

The thesis must still conform to all other requirements of the "Guidelines for Thesis Preparation." The thesis must include: A table of contents, an abstract in English and French, an introduction which clearly states the rationale and objectives of the study, a review of the literature, a final conclusion and summary, and a thorough bibliography or reference list.

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In case of manuscripts co-authored by the candidate and others, the candidate is required to make an explicit statement in the thesis as to who contributed to such work and to what extent. Since the task of the examiners is made more difficult in these cases, it is the candidate's interest to make perfectly clear the responsibilities of all the authors of the co-authored papers.

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Contributions of Authors

This thesis consists of five papers. The first paper is co-authored by myself, Elke Reissing, and Drs. Yitzchak Binik, Samir Khalifé, and Frances Abbott. The second paper is co-authored by myself, Dr. Yitzchak Binik, Dr. Samir Khalifé, Dr. Frances Abbott, and Rhonda Amsel. The third paper is co-authored by myself, Kimberley Payne, and Drs. Yitzchak Binik and Samir Khalifé. The fourth paper is co-authored by myself and Drs. Yitzchak Binik and Samir Khalifé. The fifth and final paper is co-authored by myself and Drs. Yitzchak Binik, Samir Khalifé, Catherine Bushnell, and Irina Strigo. The following is a statement regarding the contributions of the various authors to the five papers.

The review paper was researched, written, and revised by myself. Elke Reissing and Drs. Binik, Khalifé, and Abbott served in an editorial capacity. The second paper resulted from a research study, which was elaborated, conducted, analyzed, and written by myself. Drs. Binik and Abbott served in an advisory capacity during the formulation of research questions and the development of the protocol, and in an editorial capacity during the writing of the final manuscript. Dr. Khalifé conducted the gynecological examinations for the patients and served in an editorial capacity. Rhonda Amsel assisted in the development of the methodology for the study and served as a statistical consultant.

The third paper was researched, written, and revised by myself, with Kimberley Payne and Drs. Binik and Khalifé serving in an editorial capacity. The fourth paper resulted from a research study using a new device for genital pain assessment. I developed the device, elaborated and conducted the study, analyzed the data, and wrote

the manuscript. Dr. Binik served in an advisory capacity during the formulation of the research questions and the development of the protocol, and in an editorial capacity during the writing of the final manuscript. Dr. Khalifé conducted the gynecological examinations for the patients and served in an editorial capacity.

The fifth paper resulted from a research study, which was elaborated, conducted, analyzed, and written by myself. Drs. Binik and Bushnell served in an advisory capacity during the formulation of the research questions and the development of the protocol, and in an editorial capacity during the writing of the final manuscript. Dr. Strigo assisted in the development of the methodology for the study and served as a statistical consultant. Dr. Khalifé conducted the gynecological examinations for the patients and served in an editorial capacity.

Statement of Original Contributions

The papers in this doctoral thesis contribute to the advancement of knowledge in three domains of research: pain, sexuality, and gynecology. Although the idea of examining vulvar vestibulitis syndrome as a pain disorder had recently been proposed, no studies of it using pain methodologies existed. The review paper is the first to achieve the following: 1) present evidence supporting the importance of the pain component in both vulvar vestibulitis syndrome and vaginismus, and 2) report findings from a preliminary study examining genital tactile and pain thresholds of women with vulvar vestibulitis.

The second paper constitutes the first research study to 1) describe the development and application of von Frey filaments specifically designed to measure genital thresholds; 2) examine tactile and pain thresholds in both genital and non-genital regions in women with vulvar vestibulitis syndrome; 3) record, under controlled conditions, pain intensity and unpleasantness ratings in response to painful stimulation; 4) measure catastrophizing tendencies towards vulvar and non-vulvar pain; and 5) provide normative genital threshold values in a non-affected population. In addition, this paper is the first to show, through both self-report and objective measurement, that women with vulvar vestibulitis have more pain complaints and lower non-genital thresholds than non-affected women.

The third paper is a unique contribution as it is the first to 1) present the pain characteristics of women with vulvar vestibulitis organized according to the criteria of the International Association for the Study of Pain, 2) review problems with existing pain measurement techniques, and 3) introduce a novel device, a vulvalgesiometer, for

standardized genital pain assessment. The fourth paper consists of the first research study using the vulvalgesiometer to measure pain thresholds and pain intensity and unpleasantness ratings in women with vulvar vestibulitis and non-affected women.

The fifth study is original as it is the first to image vulvar touch and pain in women with vulvar vestibulitis syndrome and non-affected women. This study uses functional magnetic resonance imaging to 1) establish normal brain activation patterns in response to vulvar touch and pain in a healthy, no-pain population, and 2) compare these neural activation patterns with those of women who suffer from vulvar vestibulitis.

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This thesis would not have been possible without the help of many dedicated team members, the first of whom is my supervisor and mentor, Dr. Irv Binik. Words are not enough to express my gratitude towards him or the positive impact he has had on my professional life. Dr. Binik has provided me with guidance, independence, trust, and encouragement within a supportive and challenging relationship. It is through this process that I was able to test my limits and go beyond what I thought possible in graduate school. I would have never thought that graduate student life could be so intellectually stimulating, personally rewarding, and ripe with opportunities.

Among the numerous opportunities that Dr. Binik has granted me, an important one was access to a multi-disciplinary research team comprised of highly talented and unique health professionals and researchers. I thank gynecologist Dr. Samir Khalifé for his devotion to and belief in my research, and Rhonda Amsel for the countless hours she spent patiently dealing with my statistical issues. I also thank Drs. Fran Abbott and Fran Wilkinson for their invaluable help during my first study, and extend warm and grateful thank you's to Dr. Catherine Bushnell, who helped make my dream of running an fMRI study a reality, and to Mike Ferreira and Jen-I Chen for their technical expertise. I thank the following members of the Montreal Neurological Institute for helping with the practicalities of conducting such an unlikely and intimate research study with professionalism and humor: André Cormier, Ronaldo Lopez, and Carollyn Hurst. I also extend much gratitude to Walter Kucharski and Steve Kecani, both of whom helped produce the vulvalgesiometers.

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I extend my gratitude to all the women who participated in my studies, and who taught me so much more about the complexities of the syndrome than endless research ever could. They are the driving force behind my passion for my research. I also thank the Fonds pour la Formation de Chercheurs et l'Aide à la Recherche and the Lloyd Carr-Harris McGill Majors Fellowship for their financial support.

To Mom, Dad, Monica, and Michael, this thesis is for you. I cherish and love you, and could not have done this without you. You reminded me that life is composed of more than my thesis; thank you. To my dear friends, Shari, Sandra, France, Lorraine, Karen, Julie, Sonia, Evelyne, Jenn, and Lucas, you have been instrumental in your role of support, keepers of my sanity, and lifeline during the ups and downs of this thesis, a million heartfelt thank you's and much love.

Introduction

The major portion of the introduction to this thesis is covered by the first paper entitled "New clinical and research perspectives on the sexual pain disorders." This paper summarizes the conceptual framework on which this thesis is based, namely that the current classification of the sexual pain disorders as sexual dysfunctions (DSM-IV; American Psychiatric Association, 1994) is inadequate as it focuses on issues of sexuality and ignores the central symptom of pain. This classification has far-reaching, negative implications for treatment and research, stemming from confusion as to why genital pain affecting sexuality is considered a sexual dysfunction any more than other pain syndromes interfering with sexuality (e.g., low back pain) (Meana, Binik, Khalifé, & Cohen, 1997). What is proposed is a new conceptualization of the sexual pain disorders, one that focuses primarily on the pain component. This pain perspective allows for the investigation of the pain and its functional effects on sexuality, for example, and sets the stage for multi-disciplinary treatment (Gatchel & Turk, 1998). Additionally, this perspective opens up the potential for several new research avenues.

To work towards the empirical investigation of the pain component of the sexual pain disorders, this thesis focuses on the most common form of dyspareunia, vulvar vestibulitis syndrome (Friedrich, 1988; Meana et al, 1997). A recent epidemiological study estimated that vulvar vestibulitis syndrome affects 12% of pre-menopausal women in the general population (Harlow, Wise, & Stewart, 2001). The rationale for studying the pain component of this syndrome is that the pain of vulvar vestibulitis 1) is highly localized to the vulvar vestibule (Friedrich, 1987), an area of the external genital region

which is amenable to pain measurement; 2) can be reliably elicited in a controlled environment since it is directly linked to sensory stimulation (Bergeron, Binik, Khalifé, Pagidas, & Glazer, 2001); and 4) is reliably described as burning and cutting (Bergeron et al., 2001).

The objectives of the first empirical paper, "Vestibular tactile and pain thresholds in women with vulvar vestibulitis syndrome" were the following: 1) to develop a reliable method of genital tactile and pain threshold measurement, achieved with modified von Frey filaments; 2) to apply this method to genital and non-genital body areas of women with vulvar vestibulitis syndrome and compare their thresholds with those of non-affected women; 3) to investigate pain intensity and unpleasantness ratings in response to painful stimulation; and 4) to examine whether women with vulvar vestibulitis exhibit pain catastrophizing tendencies.

The third paper entitled "Pain measurement in vulvodynia" uses evidence from the first empirical paper in addition to that from the existing literature to re-conceptualize the classification of vulvar vestibulitis syndrome as a pain disorder. This is achieved by using pain classification criteria as outlined by the Classification of Chronic Pain manual (Merskey & Bogduk, 1994) published by the International Association for the Study of Pain. In addition, this paper raises the issue of the importance of having standardized, reliable tools and methods with which to measure the pain, and introduces a new genital pain measurement device, a vulvalgesiometer. The goal of the fourth paper "A new instrument for pain assessment in vulvar vestibulitis syndrome" was to use the vulvalgesiometer to measure: 1) pain thresholds in women with vulvar vestibulitis and non-affected women; 2) pain intensity and unpleasantness ratings in response to painful

stimulation; and 3) adjectives used to describe the pain. The results from this study demonstrate that the vulvalgesiometer is a highly useful tool for pain measurement in women with vulvar vestibulitis syndrome.

The purpose of the fifth paper "Neural correlates of touch and pain sensation in women with vulvar vestibulitis syndrome" was to investigate brain activation patterns in response to genital touch and pain in women with vulvar vestibulitis syndrome and non-affected women via functional magnetic resonance imaging. The rationale for this study was based on the following: 1) the first empirical study provided evidence that the sensory abnormality in women with vulvar vestibulitis was not restricted to the genital region, and therefore, suggested that more than just the peripheral nervous system played a role in the development and maintenance of this pain condition; 2) a standardized tool, the vulvalgesiometer, now existed that reliably elicited similar pain sensations to that experienced in the sexual situation; in addition, the vulvalgesiometer was made of non-magnetic materials and was thus appropriate for use in the imaging environment; and 3) that reliable imaging data regarding touch and pain sensations existed, which allowed for the comparison of existing data with that collected from this unique study. Results from this study are presented and implications of the pain perspective of vulvar vestibulitis syndrome are discussed.

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New Clinical and Research Perspectives on the Sexual Pain Disorders

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A woman became unable to achieve penetration after repeated painful intercourse. This case illustrates the shortcomings of the present nomenclature and diagnostic criteria for the sexual pain disorders, dyspareunia and vaginismus. The *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, considers the sexual pain disorders as sexual dysfunctions, completely ignoring the pain component and leading to internally inconsistent descriptions of these conditions. The role of pain in dyspareunia and vaginismus and the implications of using a pain syndrome framework for diagnosis and research are discussed. Most important, pain syndrome framework focuses diagnosis on the presence or absence of pain and the history of the development of the pain. This approach does not deny a role for psychosocial factors, but rather considers them as critical components of the pain syndromes. From the pain syndrome perspective, preliminary data indicate that vulvar vestibulitis syndrome may be associated with nonpainful sensory abnormalities, and that women with vaginismus do not constitute a homogeneous group.

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RS, a single, 25-year-old kindergarten teacher, was referred by her gynecologist to a sex therapy service at a local hospital because of complaints of painful intercourse. Upon questioning, RS indicated that she experienced pain-free and pleasurable intercourse for 6 years between the ages of 17 and 23. She reported being orgasmic most of the time and lubricating adequately before and during intercourse. Although she described her first penetration experience at the age of 17 as having a "tearing" quality, this incident was the only time she experienced pain with penetration over the course of 6 years and five partners. She recounted having had numerous yeast infections since she started taking oral contraceptives at the age of 19, which she typically treated with over-the-counter suppositorie and creams.

At the age of 23, RS started dating LB, a 28-year-ol college professor. She had pain-free sexual intercour with him for the first 6 months of their relationship, which point she began to experience a sharp, burnir pain at the vaginal entrance during penile penetratio RS also noticed that tampon insertion triggered a sim lar pain. LB made an effort to increase both the amou of foreplay before penetration and the amount of no penetrative sexual activities from which they coul both derive pleasure. Despite their efforts, the pa persisted. It typically spread from the vaginal entran during initial penetration to the lower part of the vag nal canal with increased friction during penile thrus ing, and it lasted for approximately ½ hour after t end of sexual intercourse. RS also reported that she e perienced an intense "burning" sensation when urina ing after intercourse.

RS first sought help from her gynecologist, wh found no physical explanation (e.g., infection, sca ring) for the pain. She was referred for a colposco and a dermatological examination. Neither evaluati revealed any cause for the pain. Nonetheless, both t gynecologist and the dermatologist prescribed cor sone creams, antibiotics, and anesthetic gels, whi did not alleviate the pain. In fact, RS's pain worsene and her desire for sexual activity decreased signi cantly. When she reported the exacerbation to her p mary gynecologist, she was referred to a psycholog in a sex therapy clinic. Therapy involved homewo assignments using graded vaginal dilators combin with relaxation exercises. However, RS terminat

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therapy after a few sessions because she found that the therapist repeatedly implied that her pain was linked to difficulties in sexual and other interactions with her partner. In addition, as a result of the pain caused by inserting the dilators, she found it impossible to relax during any activity related to insertion.

After 1½ years of unsuccessful treatments and continued pain during intercourse, RS found that penetration had become impossible because she tensed up when she anticipated penetration. At the time of assessment, RS avoided all sexual activity and the use of tampons. She reported experiencing intense anxiety when thinking of having sexual intercourse with her partner and anticipating upcoming pelvic examinations. Furthermore, her 2-year relationship with LB was not progressing well. RS's avoidance of all sexual activity with him impacted negatively on their relationship. LB maintained that he felt increasingly frustrated with his inability to help, yet he was willing to attend and participate in therapy if "a solution for the pain could be found."

Comments on the Case Study of RS

The case study of RS presents an important and common dilemma to health professionals treating genital pain. Depending upon the point in time at which, and to whom, RS presents, her diagnosis could vary from dyspareunia, vaginismus, female sexual arousal disorder, hypoactive sexual desire disorder, a sexual dysfunction resulting from high levels of anxiety and relationship difficulties, sexual aversion disorder, or no diagnosis at all due to the absence of physical findings. Treatments for RS could range from relaxation, vaginal dilatation, psychotherapy, sex therapy, lubricants, topical steroidal creams, antibiotics, special diets, vestibulectomy, to nothing at all (cf. Binik, Meana, Berkley, & Khalifé, 1999).

Indeed, a case such as that of RS is not only frustrating for health professionals, it is discouraging and upsetting for women who experience pain with intercourse. Because the pain does not appear to have any observable physical cause, it is understandable that some professionals implicate psychological factors (e.g., anxiety, relationship problems) even when no evidence supports this etiology. Many women may then perceive the pain as being "in their heads," but they do not react positively to the implicit message of their physical discomfort as having a psychological basis. In fact, in a recent treatment outcome study, the majority of women rated psychological treatments as less credible for treating dyspareunia than medical treatments (Bergeron et al., 1999). As a result of fruitless searches for treatments, many women decide to give up seeking treatment altogether and live with the pain. On the other hand, women who do seek help from mental health professionals often find themselves in a frustrating situation: They are asked about every aspect of their psychosocial functioning except the pain, the main reason for seeking help in the first place (Binik et al., in press). In addition, the treatment provided to these women is often problematic (see Treatment section below). The significant dilemma presented to health professionals by women in situations similar to that of RS is rooted in inadequate diagnostic and classification criteria for the sexual pain disorders.

After a multidisciplinary assessment including gynecologists, psychologists, sex therapists, and pelvic floor physical therapists, RS was diagnosed with vulvar vestibulitis syndrome (VVS), one of the most common causes of dyspareunia affecting women of childbearing age (e.g., Friedrich, 1988). The diagnostic criteria for VVS have only recently been identified as severe pain upon vestibular touch or attempted vaginal entry; exquisite tenderness to cotton swab palpation of the vulvar vestibule; and, in some women, evidence of irritation (Friedrich, 1987). Women with VVS experience a sharp, burning pain at the vaginal entrance upon penetration that often spreads inside the vagina with increased friction during thrusting. The pain can continue for some time after intercourse. Furthermore, it interferes with nonsexual penetrative activities, such as tampon insertion and gynecological examinations (Bergeron et al., 1999). Finally, dyspareunia may result in the avoidance of sexual relationships (American Psychological Association (APA), 1994).

DSM-IV Classification of the Sexual Pain Disorders

Both dyspareunia and vaginismus are included in the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) (APA, 1994) as sexual pain disorders. They are classified as sexual dysfunctions, that is, "disturbance[s] in sexual desire and in the psychophysiological changes that characterize the sexual response cycle" (p. 493). Consequently, the sexual pain disorders are categorized in the same manner as the sexual dysfunctions: lifelong versus acquired, generalized versus situational, and as due to either psychological or combined psychological and medical factors. However, there is little justification for this classification. Dyspareunia and vaginismus interfere with and disrupt sexual activity and often result in secondary sexual dysfunctions, but they are not disorders of the sexual response cycle—desire, arousal, orgasm—a central concept of sexual dysfunctions according to the DSM-IV (Reissing, Binik, & Khalifé, 1999).

The classification of the sexual pain disorders as sexual dysfunctions is not an effective one. Meaningful information about the pain and its potential causes cannot be derived from its current classification for several reasons. First, with respect to the "lifelong versus acquired" classification of the sexual pain disorders, if a woman with sexual pain experiences 1 month of pain-free intercourse followed by 5 years of painful intercourse, is the pain classified as lifelong or acquired? Second, the categorization of the sexual pain disorders as due to either psychological or combined psychological and medical factors contradicts current non-dualistic conceptualizations of pain disorders (e.g., Melzack & Wall, 1996) and current biopsychosocial health models.

The current definitions of dyspareunia and vaginismus also reflect many of the classification difficulties shared by the majority of disorders under the heading of the sexual dysfunctions (e.g., premature ejaculation, hypoactive sexual desire disorder). The words "recurrent" and "persistent" are repeatedly used throughout this section of the DSM-IV; however, they are never explicitly defined. How often should an event occur in order to be considered recurrent or persistent? In addition, the DSM-IV (APA, 1994) states that "occasional pain associated with sexual intercourse that is not persistent or recurrent . . . is not considered to be dyspareunia" (p. 512). When does occasional pain become recurrent and persistent?

Since the DSM-IV includes both dyspareunia and vaginismus under the classification of sexual dysfunctions, it implicitly states that sexual difficulties are fundamental factors in understanding women with these disorders (cf. Binik et al., 1999). Although sexual difficulties may be crucial some of the time, there is no evidence to suggest that they are central in most cases. It is more likely that the sexual problems occur as a result of pain with intercourse rather than as a cause of the pain. Moreover, the same pain can be elicited in situations other than sexual ones. RS not only experienced pain with intercourse, but also with tampon insertion. Finally, RS became unable to have vaginal penetration in both sexual and nonsexual situations due to increased vaginal tension and anxiety as a result of the anticipation of the pain.

Conceptualizing dyspareunia and vaginismus as pain syndromes will have a far-reaching impact on both research and treatment. Such a conceptualization will determine (a) how and which scientists study pain; (b) how and which health professionals treat it; (c) the reactions of individuals to their own pain; (d) the reactions of significant others; and (e) the way in which larger social institutions address the problem (Hanson & Gerber, 1990). In fact, the most recent edition of the *Classification of Chronic Pain* (Merskey & Bogduk, 1994) is the only pain classification system to include dyspareunia and vaginismus among its long list of pains, although no descriptions of the clinical characteristics are included (Reissing et al., 1999).

DSM-IV Definition of Dyspareunia

Dyspareunia is currently defined as "recurrent or persistent pain associated with sexual intercourse" (APA, 1994, p. 513). This definition of a sexual pain disorder is striking since dyspareunia is the only pain that is defined by the activity with which it interferes. An interesting illustration of this inadequate definition can be made: the analogy between dyspareunic pain and interference with sexual intercourse, and back pain and subsequent work interference. Although back pain is one of the major causes of work disability, it would never be classified as a work disorder even though, in some cases, work difficulties may account for or exacerbate the pain. Clinicians dealing with work disability related to back pain carefully and independently examine the pain, the work situation, and the potential relationship between the two. Sometimes there is a close relationship between the pain and work interference, while at other times they are not significantly related (Wall & Melzack, 1994).

Dyspareunia merits the same careful examination of interactional factors that has been devoted to the relationship between back pain and work disability. In addition, careful attention should be paid to the quality, intensity, and duration of the pain, which is the major complaint of dyspareunic women. Meana, Binik, Khalifé and Cohen (1997) proposed that dyspareunia may be better described as a pain disorder resulting in a disruption of sexual behavior and vaginal hypertonicity rather than a sexual dysfunction manifesting itself as pain.

Pain Component of Dyspareunia

Although the diagnosis of dyspareunia is based on a woman's self-report of pain during intercourse, the DSM-IV does not quantify or qualify its pain characteristics. In fact, its classification variables do not even specifically address the pain that is the defining characteristic of dyspareunia. Instead, it addresses variables, such as the onset and context of the pain, which are not useful in differentiating the variety of pains included in the definition of dyspareunia (Meana et al., 1997) or in differentiating dyspareunia from vaginismus.

As the pain aspect of dyspareunia has not been examined, very few studies have quantified, characterized, or differentiated the pains of dyspareunia in order to present it as a pain syndrome. Meana (1996) was the first researcher to investigate the conceptual-

ization of dyspareunia from a pain perspective. In her study, women with chronic coital pain underwent an extensive and structured psychosocial and gynecological protocol. Not only did Meana and colleagues (1997) demonstrate that the pain of dyspareunia was measurable both qualitatively and quantitatively, they also illustrated that the pain of dyspareunia was similar to the experience and intensity of pain endured in pain syndromes such as arthritis or back pain (Meana, 1996).

Consistent with their pain perspective of dyspareunia, the pain of dyspareunia was not related to sexual difficulties or psychological factors. In addition, Meana et al. (1997) demonstrated the existence of at least four different subgroups of dyspareunia: women with VVS, women with vulvo-vaginal atrophy, women with various gynecological problems that contributed to their dyspareunia, and women without apparent pain-related findings. In contrast, the DSM-IV assumes a homogeneous nature of dyspareunia and fails to discriminate among different types of pain. For example, the following cases would be classified under the heading of dyspareunia although they intuitively seem quite distinct: a 25-year old woman with a burning-cutting pain at the vaginal opening during penile penetration, a 35-year old woman with a dull-aching pain near her right ovary during deep penile thrusting, and a 55-year old postmenopausal woman with a sore-sharp vaginal pain during penetration despite adequate arousal. These subtypes potentially have different etiologies and treatments, supporting a heterogeneous definition of dyspareunia that includes at least three distinct diagnostic groups (Meana et al., 1997).

Moreover, the major predictors of these diagnostic subtypes of dyspareunia were not those DSM taxa (e.g., onset and context) used to describe the sexual dysfunctions (and consequently, the sexual pain disorders), but those taxa (e.g., location and temporal pattern of the pain) typically used to characterize pain disorders (Meana et al., 1997). These findings point to the relevance and usefulness of conceptualizing dyspareunia as a pain disorder.

Exclusion Criteria for Dyspareunia

Excluded from the DSM definition of dyspareunia is pain caused by lack of lubrication. This exclusion criterion does not appear to be supported empirically or clinically (cf. Binik et al., 1999). This DSM-III-R (APA, 1987) exclusionary criterion has been ignored by many authors (e.g., Black, 1988), and others maintain that decreased lubrication is the most common cause of dyspareunia (e.g., Riley & Bromich, 1987).

It is possible that the DSM-IV task force wanted to exclude dyspareunic postmenopausal women since they may experience decreased lubrication consequent to reduced estrogen levels. Although it is relatively well established that reduced estrogen levels can result in vulvo-vaginal atrophy and decreased lubrication, the evidence linking these factors with pain reports is less convincing (cf. Binik et al., 1999). In fact, one study (Laan & van Lunsen, 1997) demonstrated that vaginal atrophy is related to levels of estrogen but not to vaginal dryness and dyspareunia, thus arguing against this exclusion criterion. Furthermore, lack of lubrication may not even be a useful exclusion criterion for premenopausal women. Wouda, Hartman, Bakker, Bakker, van de Weil, & Weijmar Schultz (1998) studied this population and suggested that reduced arousal or lack of lubrication does not distinguish dyspareunic women from controls.

This exclusion criterion is also hard to formally assess. It is difficult to ascertain whether a woman is lubricating adequately. First, women do not typically lubricate during a gynecological examination. Relying on women's self-report of lubrication is also problematic, as many women may not be able to accurately report their degree of lubrication (Meana & Binik, 1994). Second, the comorbidity between inhibited arousal and dyspareunia is believed to be quite high. When women anticipate pain, they become fearful, and lubrication decreases (Meana & Binik, 1994). It is difficult to understand why coital pain due to decreased lubrication would not qualify as dyspareunia when it is related to psychological phenomena that inhibit arousal.

A further exclusion criterion for a diagnosis of dyspareunia is the presence of vaginismus, yet numerous clinical reports (e.g., Basson & Riley, 1994; Van Lankveld, Brewaeys, Ter Kuile, & Weijenborg, 1995) suggest that there is a significant rate of comorbidity between these two sexual pain disorders. It is conceivable that women who suffer from chronic dyspareunia develop an involuntary, protective response of contracting their pelvic floor muscles with the anticipation and/or experience of pain. Over time, the resulting hypertonicity (i.e., increased muscle tone) at the vaginal opening in women with VVS further increases their pain by adding pressure and friction to the already sensitive area. Eventually, the heightened levels of pain experienced from the combination of the vestibule's high sensitivity and increased muscle tension could prevent intercourse, as in the case of RS.

DSM-IV Definition of Vaginismus

The DSM-IV classifies vaginismus as a sexual dysfunction under the subcategory of sexual pain disorders. The main diagnostic criterion for the diagnosis of vaginismus is the presence of a "recurrent or persistent involuntary spasm of the musculature of the outer

third of the vagina that interferes with sexual intercourse" (APA, 1994, p. 515).

A vaginal muscle spasm is the central and defining diagnostic criterion for vaginismus regardless of nosology (e.g., APA, 1994; World Health Organization, 1992). It is considered both cause and mechanism of the disorder, yet there are remarkably few clinical studies (e.g., Lamont, 1978) and only one controlled study investigating the spasm. Van der Velde and Everaerd (1999) compared 67 women with vaginismus and 43 women without vaginal penetration difficulties using intravaginal surface electromyogram (sEMG) recordings. The researchers found no differences between the groups in resting tone or ability to voluntarily control the pelvic floor muscles.

In addition to the lack of evidence for the presence of a spasm, some confusion exists over the definition of a spasm versus that of a contraction (Reissing et al., 1999). The DSM uses both terms interchangeably. However, a contraction is a shortening of the skin, fascia, and muscles that only temporarily compromises activity and can be released without intervention. A spasm, on the other hand, is the result of a continued state of contraction accompanied by metabolic and circulatory changes. The chronic muscle contraction becomes self-perpetuating, regardless of the presence of injury or emotional tension (Kisner & Allen Colby, 1990). Given the important putative involvement of the pelvic floor muscles in vaginismus, it is surprising that the disorder is not discussed in the general literature on muscle activity, spasm, and cramps. It appears to us that reflex muscle guarding at the vaginal opening with penetration, or the anticipation of penetration, represents an important symptom, but it should be neither the defining criterion nor the sole focus in treatment. Attention needs to be paid to the presence of anxiety related to penetration and/or sexuality in general, fear of pain, and physiological causes of pain (e.g., VVS) precipitating the protective muscular reflex.

In both clinical and research contexts, a diagnosis of vaginismus is often quoted as confirmed by a gynecologist. Yet women presenting with vaginismus tend to demonstrate a degree of anxiety and avoidance to all forms of vaginal penetration (Reissing et al., 1999), and a gynecological examination to confirm a vaginal spasm may be refused (e.g., Lamont, 1978) or considered potentially damaging for therapy progress (e.g., Drenth, 1988). Clinicians come to realize the futility of confirming vaginal muscle spasm and consequently use what has been described as a "history comparable with vaginismus" (Biswas & Ratnam, 1995) or "classic descriptions" of the problem (Lamont, 1978). It is unclear whether treatments aimed at the putative mechanism of the problem (e.g., Masters & Johnson, 1970) are more efficacious than those targeting hypothesized psychological and developmental etiological factors (e.g., Shaw, 1994). Despite claims of excellent outcome, the treatment of vaginismus can neither be considered "well established" nor "probably efficacious" according to recently proposed criteria (APA, 1994; Heiman & Meston, 1997).

Pain Component of Vaginismus

Vaginismus is classified under the subcategory of sexual pain disorders in the DSM-IV, but the experience of pain is not necessary for a positive diagnosis. In the associated text, the presumed vaginal spasm is described as a "contraction [that] may be so severe or prolonged as to cause pain" (p. 514) which "may range from mild, inducing some tightness and discomfort, to severe, preventing penetration" (p. 513). However, at present no information exists describing the quality, intensity, or duration of pain or discomfort associated with vaginismus. If pain plays a primary role in the development of the disorder, the implications for treatment are important. Furthermore, the experience of pain may be the source of interference with intercourse rather than the a physical barrier posed by the putative vaginal muscle spasm. Clearly, the consideration of pain in vaginismus blurs the diagnostic boundaries between vaginismus and dyspareunia (e.g., van Lankveld et al., 1995). Some clinicians treat vaginismus as a severe form of dyspareunia (Crenshaw & Kessler, 1985), whereas others consider dyspareunia to be the cause of vaginismus (e.g., Shortle & Jewelewicz, 1986), and others report significant rates of comorbidity (e.g., Basson & Riley, 1994).

Over time, RS experienced some vaginal tightness resulting from the pain at the vaginal entrance. Initially, she was still able to have intercourse, albeit with pain. According to DSM-IV (APA, 1994) criteria, she could have been diagnosed with dyspareunia. As her pain disorder remained untreated, a diagnosis of vaginismus became more likely, based on the DSM-IV descriptor that even mild vaginal contractions inducing some discomfort would be a sufficient condition for such a diagnosis. Consequently, a diagnosis of dyspareunia must be excluded, ignoring her complaint of pain with intercourse that originally led to the increase in muscle tension. Either diagnosis, while applicable, contributed little to therapy planning and the effective treatment of RS's symptoms.

Treatment of the Sexual Pain Disorders

Treatment of Dyspareunia

One might assume that recommending a form of effective treatment for RS would be difficult due to the in-

ability to establish a diagnosis. However, the typical behavioral treatment for both dyspareunia resulting from VVS and vaginismus is similar. On the other hand, this treatment is not altogether effective for either disorder. First, one of the standard treatments for dyspareunia is not often appropriate for VVS: To treat the pain problem, the patient is required to insert graded vaginal dilators while practicing relaxation exercises. This type of treatment appears to be borrowed from the standard treatment of vaginismus based on the unsubstantiated assumption that increased muscular tension is also present in women with dyspareunia. Some patients, like RS, may find it impossible to insert the dilators regardless of their ability to relax because of a chronic hypertonicity of the pelvic floor musculature due to repeated pain in the area. In addition, certain sized dilators will always elicit pain due to pressure exerted on the vestibular area. Physical therapy and pain management may be a first step for these patients.

Multimodal assessments by gynecologists, psychologists, and pelvic floor physical therapists are essential in diagnosing physiological problems that can be the source of dyspareunia (e.g., VVS, infections). Physical problems may result in pelvic floor hypertonicity and secondary sexual or relationship difficulties, important aspects in treatment planning. However, the effectiveness of physical therapy for dyspareunia has never been examined. There is only one methodologically sound outcome study on the treatment of dyspareunia. This randomized treatment outcome study compared group cognitive-behavioral therapy, sEMG biofeedback, and vestibulectomy in the treatment of dyspareunia resulting in vulvar vestibulitis (Bergeron et al., 1999). The group cognitive-behavioral and sEMG treatments both comprised a total of 8 sessions over a 12-week period, and the vestibulectomy condition consisted of a minor surgical procedure involving the excision of the vestibular area. Results indicated that all treatment groups reported significant reductions on pain measures at posttreatment and 6-month follow-up, although the vestibulectomy group was significantly more successful than the other two groups. Results from this study suggest that women with dyspareunia can benefit from both medical and behavioral interventions.

Treatment of Vaginismus

Treatment approaches to vaginismus have changed little since Masters and Johnson's (1970) description of the use of vaginal dilators. Typically, vaginal dilatation exercises are combined with a series of additional interventions depending on the circumstances of the patient and/or the orientation and repertoire of the clinician (Reissing et al., 1999). Despite the involvement of a presumed vaginal muscle spasm in vaginismus, physical therapy has never been recommended. This seems quite surprising, as physical therapy is the standard treatment for muscular spasms. In addition, vaginal dilation appears to be a variant of the treatment that an experienced physical therapist would use. Moreover, there are no methodologically sound outcome studies for any treatment of vaginismus (Reissing et al., 1999). On the basis of the available information, it would appear that individualized treatment—combining sex therapy, psychotherapy, pain management, and physical therapy techniques—is the most rational approach. It is also logical that treatment of the painful condition (e.g., VVS), as in the case of RS, must precede or be conducted concurrently with any other therapeutic approaches.

New Research Perspectives on the Sexual Pain Disorders

A major reason for classifying dyspareunia and vaginismus as sexual dysfunctions has been the lack of a known physical basis for the pain, and this conceptualization has inhibited their study as pain syndromes. However, the presence of a physical explanation is not an important criterion for defining a pain syndrome. For example, low back pain is recognized as a chronic pain syndrome even though there are no physical findings in many cases. It is possible that the methodology for detecting the underlying pathology may not be sensitive enough, or that the appropriate examination has not yet been done owing to a lack of understanding. The conceptualization of a disorder as a pain syndrome does not deny that psychosocial factors play a role in both the pain and the disability resulting from the pain, nor does it argue that treatment be focused solely on physical and pharmacological methods. Rather, it places low back pain in the context of pain, thus setting the context for both treatment and research.

The pain context has several important treatment implications. For management of patients presenting for clinical treatment, the assessment focuses on pain and its functional effects as the central problem. The assessment begins with the quality, location, and historical development of the pain, and elimination of treatable conditions. Characterization of the pain leads to inquiry about the effects of the pain on the patient's functioning and on relationships, an approach very different from that of defining a problem as psychiatric in nature. Once the pain has been adequately characterized, it can be determined if it is consistent with the disability resulting from the pain, and then the contribution of psychosocial factors can be examined. As a result, treatment is multimodal, including both physical and psychosocial interventions. One im-

portant consequence of this approach is that it is easier for clinicians to provide help in psychosocial areas if the patient and partner consider their psychosocial problems as secondary to the physical pain.

The implications of conceptualizing coital pain in the context of pain syndromes for research are also important. First, pain involves the activation of peripheral and central neuronal systems, whose normal function is assumed to be important for protecting tissues from injury. Second, activation of these neuronal systems produces both a sensory experience that can be described in terms of intensity and quality, and also an unpleasant emotional experience that has strong motivational effects (Merskey & Bogduk, 1994). Pathological pain is thought to involve inappropriate activation and/or sensitization at some level of the pain transmission system so that the signal reaching the higher centers is amplified. The amplification of signals can occur at every level of the nervous system, from increased sensitivity of receptors in the periphery, lack of inhibition in the CNS, through to an alteration of the balance between the sensory and the emotional components of pain.

We have been using the pain syndrome framework to investigate the characteristics of VVS. Using the McGill Pain Questionnaire (Melzack, 1975), Bergeron et al. (1999) found that pain evoked during the cotton swab test is described as having thermal or sharp qualities, and this is quite different from pain reported by women with other reproductive tract problems.

The very consistent description of the pain strongly supports considering VVS as a distinct condition. One question that arises is whether the quality of pain is different from pain occurring when the perineum is inflamed by yeast infections or after episiotomy. In a current study we have been examining punctate tactile sensitivity in the vestibular area in women with VVS—in other words, looking at whether there is normal sensitivity to nonpainful touch. This methodology has been used elsewhere to show that the oral mucosa was hypersensitive to non-painful heat in burning mouth syndrome (Svensson, Bjerring, Arendt-Nielsen, & Kaaber, 1993). It has also been shown that the back of the pharynx is hyposensitive to thermal change in obstructive sleep apnea (Larsson, Carlsson-Norlander, Lindblad, Norbeck, & Svanborg, 1992). These studies indicate that there are neurological abnormalities in these conditions, and it is possible that more effective treatments can be developed if these abnormalities are fully characterized.

Our preliminary results examining punctate tactile thresholds in women with VVS indicate that they have significantly lower thresholds for punctate tactile sensation in the vulvar vestibule; as expected, pain thresholds are also significantly lower. In other words, affected women detect touch with a fiber that is significantly finer than that detected by normal controls. These results would be consistent with inflammation, but recent histological studies did not find evidence that normal controls and women with VVS differ in indices of inflammation (e.g., Lundqvist, Hofer, Olofsson, & Sjöberg, 1997). Another explanation for lower tactile thresholds is greater density of cutaneous innervation of the area, and indeed, this finding has been recently reported (Weström & Willén, 1998). The data raise questions about other dimensions of cutaneous sensation, such as thermal sensitivity.

The observation of a quantifiable difference in tactile sensation implies that it may be possible to more accurately quantify treatment outcomes. For example, although the vestibulectomy is a successful treatment, it is not known exactly why it works and, more important, why it is not successful in approximately one-third of cases. Psychological treatments such as pain management, while having lower success rates, nevertheless result in a 40% pain reduction (Bergeron et al., 1999). If the response to psychotherapeutic methods alters peripheral thresholds, the data would support the involvement of psychosocial factors in the etiology of pain. The data on tactile sensation also suggest that there may be a well-defined pathological basis for the disorder, such as overproduction of neurotrophic factors, which could have important therapeutic implications. Thus, conceptualizing VVS as a pain disorder that is maintained and exacerbated by a combination of psychological and physical factors has important and far-reaching implications.

In another study, we examined the reliability of the DSM-IV diagnostic criteria of vaginismus in women who were never able to have intercourse, and in women with a history of avoidance of vaginal penetration for at least 1 year. Most women indicated that the experience of pain and/or fear of pain were the primary reason for being unable to have full penile-vaginal penetration or for avoiding intercourse. Preliminary results of this study indicate that over 50% of women in the vaginismus group reported pain upon vestibular palpation (as in the case of RS), and 9% had hymeneal abnormalities. It remains to be seen whether the women with VVS-like vestibular pain report pain quality similar to that in women with uncomplicated VVS. Gynecologists on the research team tended to diagnose vaginismus when a pelvic examination was not possible due to the anxiety of the patient, but no actual spasm was observed by the gynecologists, regardless of whether the examination was completed or not. Physical therapists agreed on diagnosis more often than the gynecologists after a manual examina-

tion of the vagina and perineum. Physical therapists found significant hypertonicity in most of the vaginismic and VVS patients, but tonicity was lower in the VVS patients, suggesting a continuum of vaginal tension, possibly related to the intensity of pain or degree of fear of pain. The data suggest that women who are unable to achieve full penile penetration are not a homogeneous group.

Clearly it is necessary to examine the characteristics of the pain in patients presenting with dyspareunia and vaginismus, and the possibility of comorbidity between dyspareunia and vaginismus should be further considered. Moreover, these studies suggest an urgent need for change in the definition and classification of the sexual pain disorders.

Discussion and Implications

Overall, evidence points to the inadequacy of the DSM-IV classification of dyspareunia and vaginismus as separate sexual dysfunctions. This conclusion is based on several points. First, the major symptom of both dyspareunia and possibly vaginismus is pain or fear of pain, and the traditional quantitative and qualitative measures of pain and pain disorders are more useful than DSM-IV criteria in describing, classifying, and treatment planning for women with dyspareunia and vaginismus. Second, the pain experienced with intercourse or attempts at vaginal penetration can be elicited in non-sexual situations, and the disruptions in sexual behavior are usually the result of the pain rather than the cause. Finally, current treatments for dyspareunia and vaginismus based on sexual dysfunction models have not been demonstrated as effective thus far (cf. Binik et al., 1999). Recent therapy outcome data based on multidisciplinary pain interventions, as opposed to those based on traditional unimodal perspective, show great promise (Bergeron et al., 1999).

A more appropriate approach to differentiate the pain of the sexual pain disorders and direct treatment would be to characterize pain during intercourse with the multiaxial pain classification of the International Association of the Study of Pain (Merskey & Bogduk, 1994). This system suggests that pain syndromes be described according to bodily region, psychophysiological system, temporal characteristics, patient's statement of intensity, and etiology. Using this system, "sexual pain" would be reclassified as a type of urogenital pain (cf. Wesselmann, Burnett, & Heinberg, 1997). In the case of RS, the specific location of her pain is the vulvar vestibule, and the involvement of psychophysiological systems includes hypertonicity of the pelvic floor muscles. The temporal characteristics of her pain illustrate that it started at the vaginal entrance with penile penetration and lasted through thrusting and for some time after the end of intercourse. The pain description includes sensory aspects such as burning and sharpness. Although the etiology of RS's pain is unknown, a multimodal assessment and treatment plan would increase the likelihood of RS's receiving appropriate and effective treatment. Emphasizing the pain aspect of the sexual pain disorders will lead to improved empirical work and clinical understanding of two important and currently neglected women's health problems.

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Transition Text 1

The review paper supported the re-conceptualization of vulvar vestibulitis syndrome as a pain disorder. In addition, it reported promising results of a preliminary investigation of genital tactile and pain thresholds via von Frey filaments in women with vulvar vestibulitis syndrome and non-affected women. Through this study, it became evident that the commercially available von Frey filaments were of limited use in the genital area for the following reasons: 1) they required a lengthy sterilization process, and 2) they were not sensitive enough to measure tactile sensitivity of women with vulvar vestibulitis; half reported feeling the lowest von Frey filament. In order to overcome these problems, we constructed a set of modified von Frey filaments, which were disposable and calibrated to exert a larger range of pressure.

We used these modified filaments to measure the following in women with vulvar vestibulitis syndrome and non-affected women: 1) genital tactile and pain thresholds; 2) non-genital tactile and pain thresholds; and 3) pain intensity and unpleasantness ratings to painful stimulation. In addition, pain catastrophizing tendencies were investigated. The following manuscript reports the results of this study.

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Vestibular tactile and pain thresholds in women with vulvar vestibulitis syndrome☆

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Abstract

Vulvar vestibulitis syndrome (VVS) is a common cause of dyspareunia in pre-menopausal women. Little is known about sensory function in the vulvar vestibule, despite Kinsey's assertion that it is important for sexual sensation. We examined punctate tactile and pain thresholds to modified von Frey filaments in the genital region of women with VVS and age- and contraceptive-matched pain-free controls. Women with VVS had lower tactile and pain thresholds around the vulvar vestibule and on the labium minus than controls, and these results were reliable over time. Women with VVS also had lower tactile, punctate pain, and pressure-pain tolerance over the deltoid muscle on the upper arm, suggesting that generalized systemic hypersensitivity may contribute to VVS in some women. In testing tactile thresholds, 20% of trials were blank, and there was no group difference in the false positive rate, indicating that response bias cannot account for the lower thresholds. Women with VVS reported significantly more catastrophizing thoughts related to intercourse pain, but there was no difference between groups in catastrophizing for unrelated pains. Pain intensity ratings for stimuli above the pain threshold increased in a parallel fashion with log stimulus intensity in both groups, but the ratings of distress were substantially greater in the VVS group than in controls at equivalent levels of pain intensity. The data imply that VVS may reflect a specific pathological process in the vestibular region, superimposed on systemic hypersensitivity to tactile and pain stimuli.

Keywords: Tactile and pain thresholds; Sexual pain disorders; Vulvar vestibulitis syndrome; Vulvodynia; Psychophysics

1. Introduction

Female dyspareunia is defined as recurrent, acute pain experienced primarily during penile–vaginal intercourse. Although it is listed in the 'Classification of chronic pain' (Merskey and Bogduk, 1994), it is almost universally considered to be a sexual dysfunction. However, several recent reviews have examined dyspareunia from the perspective of a pain syndrome. One demonstrated that the pain of dyspareunia is measurable, both qualitatively and quantitatively (Meana et al., 1997a). In addition, it indicated that discriminable subtypes of dyspareunia are characterized by the location and temporal pattern of the pain, rather than the DSM-IV taxa (American Psychiatric Association, 1994) used to describe the sexual dysfunctions (e.g. lifelong vs. acquired; for reviews, see Meana and Binik, 1994; Baggish and Miklos, 1995; Bergeron et al., 1997; Binik et al., 1999; Masheb et al., 2000). Importantly, the pain of dyspareunia was not related to negative sexual experiences or sexual abuse, nor was it limited to sexual intercourse. These findings support conceptualizing and classifying dyspareunia and its subgroups as pain disorders as opposed to sexual dysfunctions.

One subtype of dyspareunia that is clearly distinguishable on the basis of pain characteristics is vulvar vestibulitis syndrome (VVS; Meana et al., 1997b). The vulvar vestibule (see Fig. 1) is located posterior to the glans clitoris between the labia minora, and contains the vaginal and urethral openings and the ducts of the Bartholin's glands (Friedman, 1995). In the sample surveyed by Meana et al. (1997b), VVS was the major cause of dyspareunia in pre-menopausal women. Although this condition was probably described as

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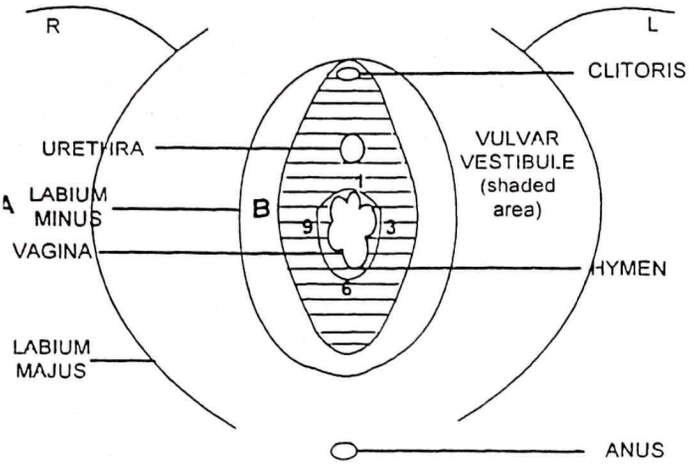

g. 1. The female genital region, showing the location of the vulvar vestiule (shaded area) around the vaginal opening between the labia minora and e hymen. Areas tested were the inner medial aspect of the thigh (A) and e midpoint of the labium minus (B) on the participant's dominant side, id four sites around the vulvar vestibule (described in terms of clock ositions: 1, 3, 6, and 9 o'clock). R, right side; L, left side.

arly as 1880 by the term 'hyperesthesia of the vulva' Thomas, 1880), only recently have formal diagnostic iteria been proposed. These criteria are: severe pain pon vestibular touch or attempted vaginal entry, exquisite nderness to cotton-swab palpation of the vulvar vestibule, id, in some women, physical findings limited to vestibular rythema (Friedrich, 1987). VVS is diagnosed by palpating ie vulvar vestibule with a cotton swab (Friedrich, 1987), lthough the application of the swab is not standardized Eva et al., 1999). For example, the swab may be moistened r dry, and may be applied to variable locations around the estibule with varying degrees of pressure, and sometimes ith an increasing pressure ramp. Over 90% of women with VS describe experiencing a burning and/or cutting pain uring intercourse (Bergeron et al., 2001a). The description f the pain has led some researchers to classify VVS as a ibtype of vulvodynia, chronic vulvar discomfort characteried by the patient's complaint of a burning sensation Wesselmann et al., 1997). However, in VVS, the pain ccurs in response to sensory stimulation in the affected ea only, while in vulvodynia, the pain is independent of ensory stimulation and not restricted to the vestibular area.

A randomized treatment outcome study (Bergeron et al., 001b) compared three treatments for VVS: vestibulectmy, group cognitive-behavioral therapy, and pelvic floor uscle exercise using surface electromyographic biofeedack. All three groups reported significant reductions on ain measures post-treatment and at 6 month follow-up, ut vestibulectomy was significantly more successful than ie other two therapies. These results suggest that local eripheral pathology may be involved in the development id maintenance of VVS. The involvement of peripheral echanisms is further supported by results of different pes of surgery. Resection of the vestibular tissue most ften leads to long-term resolution of the pain (e.g. oodruff and Parmley, 1983; Peckham et al., 1986; Friedrich, 1987; Marinoff and Turner, 1991), while undercutting the tissue which allows regeneration of the innervation and cutaneous vascular bed does not produce long-term pain relief (Bornstein et al., 1995).

Studies of vestibular tissues have produced mixed support for peripheral mechanisms in the etiology of VVS. Studies of inflammation and inflammatory cytokines have produced inconsistent results, depending primarily on the source and availability of appropriately matched control tissue samples (e.g. Pyka et al., 1988; Michlewitz et al., 1989; Furlonge et al., 1991; Friedman, 1995; Prayson et al., 1995; Foster and Hasday, 1997; Lundqvist et al., 1997; Chadha et al., 1998; Slone et al., 1999). In general, these studies suggest that inflammatory infiltrates are common in vulvar tissues whether or not the women have VVS, and thus are not necessarily related to pain. Jeremias et al. (2000) reported that women with VVS were more likely to be homozygous for Allele 2 of the interleukin-1 receptor antagonist gene, which is also associated with other chronic epithelial inflammatory conditions. Two studies have reported increased density of neuropil in the vestibular epithelium in affected women (Bohm-Starke et al., 1998; Weström and Willén, 1998). These findings raise the question of whether VVS is associated with sensory abnormalities, as has been observed in psychophysical studies with other pain disorders, such as fibromyalgia (Kosek et al., 1996) and burning mouth syndrome (Svensson et al., 1993). However, there is very little information about sensory function and none on sensory thresholds in the female genital region, despite the assertion by Kinsey et al. (1953) that the vestibule is "as important a source of erotic stimulation as the clitoris" (p. 579).

The present study compared women with VVS and matched controls in a series of tests that included the following: (1) thresholds for punctate tactile and pain sensation around the vulvar region, and the stability of these thresholds over time; (2) threshold measurement in non-vulvar areas; (3) pain and distress ratings to sustained pain stimuli in the vestibular region; (4) the tendency for affected women to have exaggerated negative orientation toward painful stimuli (i.e. catastrophizing; Sullivan et al., 1995); and (5) pressure-pain tolerance over the tibia and the deltoid muscle.

2. Methods

The experiment was reviewed and approved by the McGill University Faculty of Medicine Institutional Review Board.

2.1. Participants

Potential subjects were recruited through local media announcements and from gynecologist referrals. After a brief telephone screening, women were interviewed and tested at a participating gynecologist's office, where study

procedures were re-explained and informed consent was obtained. Participants were reimbursed $75 CDN to cover expenses related to their participation in this 3 h study. Most women also returned for a second session to assess threshold stability over time and to test thresholds in additional body sites, and they received an additional $75.

Women with VVS were matched to control women according to age (±3 years) and use of oral contraceptives (yes or no). The inclusion criteria for women with VVS were: (1) pain during intercourse which is/was subjectively distressing, occurs/occurred on most intercourse attempts, and had a minimum duration of 6 months; (2) pain limited to intercourse and other activities involving vestibular pressure (e.g. tampon insertion); and (3) a mean pain rating of at least 4 on a 0 (no pain at all) to 10 (worst pain ever felt) Likert scale during the cotton-swab test (see below). Participants in the control group were included if they reported pain-free intercourse and had an average pain rating of less than 4 on the Likert scale during the cotton-swab test (see below). Exclusion criteria for both groups were pelvic or vaginal pain not clearly linked to intercourse, a history of remitted dyspareunia, major medical and/or psychiatric illness, active vaginal infection, vaginismus, surgical treatment for dyspareunia, or current pregnancy.

2.2. Procedure

2.2.1. Interview

Socio-demographic information, relationship history, and gynecological history were collected from all subjects in a structured interview. Subjects were prompted with a list of body systems and sites, and asked about having any other frequently experienced pain problems not related to intercourse. They were also asked if they had been diagnosed with any other pain disorder. Women with VVS provided a history of their coital pain, while control subjects were asked to describe an occasion during which they had felt pain upon vaginal penetration (e.g. during a gynecological examination). Both groups of women completed the McGill–Melzack Pain Questionnaire (MPQ; Melzack, 1975) with respect to this pain. Both groups also filled out the Pain Catastrophizing Scale (PCS; Sullivan et al., 1995) with respect to regularly experienced, non-intercourse-related pain (called 'general' pain, e.g. headache). Additionally, women with VVS were asked to think about their most recent intercourse attempt and answer the PCS with reference to that experience.

2.2.2. Gynecological examination

For the examination by the gynecologist, women lay in the supine position on an examining table with their legs comfortably supported by stirrups that extended from the back of the knee to the foot. The gynecological examination consisted of the following: (1) cotton-swab palpation of six randomly ordered vestibular sites (described in terms of clock positions, with 12 o'clock just below the urethral meatus; see Fig. 1) that were matched within VVS–control subject pairs: 1 o'clock, between 1 and 3 o'clock, between 3 and 6 o'clock, 6 o'clock, between 6 and 9 o'clock, and between 9 and 1 o'clock. This test is commonly referred to as the cotton-swab test and constitutes the main gynecological diagnostic tool for VVS (Friedrich, 1987); and (2) a standard bimanual palpation of the vagina (anterior vaginal wall, pubococcygeal muscle, uterosacral ligament), uterus (cervix and corpus with and without motion), and adnexae (with and without motion). A research assistant recorded the pain ratings on a Likert scale from 0 (no pain at all) to 10 (worst pain ever felt) during the examination. The cotton-swab test was, by definition, painful for women with VVS, but this pain had disappeared in all women before sensory testing began.

2.2.3. Sensory tests

Sensory tests were carried out after the gynecological examination on the same examining table and in the same position by the person who conducted the interview. Because of the very large differences in the responses of women with VVS and controls to any touching in the vestibular region, blind testing was not possible and was, therefore, not attempted. However, blank trials (see Section 2.2.4) constitute a control for bias resulting from interactions between the subject and the tester. Sensory testing took 50–70 min. A rest period was allowed if the woman became uncomfortable in the supine position. Tactile and pain thresholds were measured with graded filaments made from sterile monofilament suture material (Prolene, Ethicon Inc.; Surgilene, Davis and Geck) that varied in length and diameter and were calibrated using an analytical balance (Eliav and Gracely, 1998). These modified von Frey filaments were constructed to include 17 filaments with log-force values ranging from 1.18 (where 1.18 log $^{-1}/10 =$ 1.51 mg) to 5.07 (11 748.98 mg) covering the lower part of the range of force exerted by the commercially available Semmes-Weinstein filaments, plus three additional filaments which exerted still lower pressures. The filaments were clamped at the appropriate length with small curved hemostatic forceps. A new set of filaments was used for each woman, and the forceps were sterilized before each testing session.

2.2.4. Tactile thresholds

Tactile thresholds were measured using a 2-down 1-up staircase method in which two positive responses (i.e. 'Yes, I felt something') to the same stimulus are required to move to the next lower stimulus value, and one negative response (i.e. 'No, I didn't feel anything') is required to move up to the next higher stimulus value (Fechner, 1860/1966; Cornsweet, 1962). This procedure yields a 71% criterion level, as opposed to a chance level (i.e. 50%) which is obtained when one positive or negative response is sufficient to reverse the procedure (Wetherill and Levitt, 1965). Filaments were applied manually so that they bent to form a semi-circle,

and were held in place for 1.5 s (the standard protocol; Bell-Krotoski, 1990). A research assistant entered the subjects' responses into a computer, and the program then prompted for the application of the next required filament. The inter-stimulus interval was 10 s. The computer randomly inserted blank trials 20% of the time, during which forceps were picked up and held near but without touching the subject. The computer monitor was not visible to the subject. To shorten the testing time, every third filament was applied until the first two positive responses to the same stimulus occurred. After this, the program prompted for the next lower stimulus value until one 'no' response was obtained, then the program prompted for the next higher stimulus value until two 'yes' responses were obtained, and so on. The computer program stopped after five reversals, and the last four of them were averaged to provide the threshold. Upon the first positive response, subjects were asked to describe the sensation by choosing adjectives (e.g. dull, mild, ticklish) from a word list, and responses were recorded by a research assistant.

2.2.5. Pain thresholds

Pain threshold testing started with a filament that approximated the tactile threshold for each vestibular site. Consecutively higher filaments were applied for 1.5 s (Bell-Krotoski, 1990) with an inter-stimulus interval of 15 s until pain was reported. Subjects then rated pain and distress on two Likert scales of 0 (no pain at all, not distressing at all, respectively) to 10 (worst pain ever felt, most distressing ever, respectively) and described the sensation using the MPQ (Melzack, 1975) adjective list. After the pain threshold was identified, three additional consecutive filaments were applied to each area to assess suprathreshold pain, and MPQ descriptors and pain and distress ratings were obtained. The highest filament used for each area was then applied for 40 s, and pain and distress ratings were recorded upon application and at 20 and 40 s.

2.2.6. Body sites tested

Fig. 1 illustrates the regions of the inner thigh, labium minus, and vestibule tested. The inner thigh and labium minus on the dominant side were tested first, and then the four sites around the vestibule (1, 3, 6, and 9 o'clock) were tested in random order, with the same order for each matched subject pair. At the second session, the following sites (in order) were tested for tactile and pain thresholds: the arm over the deltoid muscle, the volar surface of the forearm 4 inches above the wrist, the tibia 5 cm below the knee, the inner thigh, the labium minus, and two counterbalanced vestibular sites (1 and 6 o'clock). All sites except the vestibular sites were on the dominant side. For convenience and comfort in the second session, the deltoid, forearm, and tibia were tested first without removing the underwear, prior to the gynecological examination and sensory tests for the inner thigh, labium minus, and vestibule. The same examiner performed threshold testing in both sessions in order to ensure consistency (Bell-Krotoski and Tomancik, 1987).

2.2.7. Pressure-pain tolerance

At Session 1, the pressure-pain tolerance was measured twice on each side over the deltoid muscle and the tibia 5 cm below the knee using a pressure tolerance meter (Pain Diagnostics and Thermography, New York). Pressure was increased manually until the supine participant said that it was no longer tolerable.

2.2.8. Psychological measures

The MPQ (Melzack, 1975) is a checklist comprised of 78 adjectives to describe pain quality and intensity. The pain rating index is a weighted sum of scaled values of the adjectives and provides a global multidimensional measure of pain. The PCS (Sullivan et al., 1995) consists of 13 statements describing various thoughts and feelings that people may experience when they are in pain (e.g. 'I keep thinking how badly I want the pain to stop', 'There's nothing I can do to stop the intensity of the pain'). Respondents were asked to rank each statement with respect to the degree to which they have these thoughts and feelings when they are in pain according to a five-point scale (0, not at all; 4, all the time).

2.2.9. Data analysis

Differences between and within groups were tested using repeated measures ANOVAs and ANCOVAs (MANOVA; SPSS 9), with the probability level reflecting the Greenhouse–Geisser adjustment for heterogeneous covariances when appropriate. Post-hoc tests of significance were done using Tukey hsd tests and correlations were tested with Pearson's method. For reporting sensory measures, data were converted to mg from log values (see Section 2.2.3) after analysis in order to express thresholds in terms that are intuitively understood. The 95% confidence interval (CI) is given for these values.

3. Results

3.1. Sample characteristics

Twenty-six nulliparous women, 13 suffering from VVS and 13 controls, completed the first test session. There were no significant differences between groups with respect to age (VVS mean 25.85, range 21–44; control mean 26.31, range 21–41), religion, language, relationship status, years of education, income, birth control method, or menstrual cycle status at the time of testing (all $P > 0.05$). All but one of the participants had hymeneal remnants, and all had a vaginal atrophy index of 3, indicating the excellent condition of the vaginal tissue (Leiblum et al., 1983). In addition, all had mobile uteri and adnexae, and none showed evidence of cervical ectropions, cervical polyps, fibroids, or prolapsed uteri. As indicated in Table 1, the groups differed

Table 1
Characteristics of women on relevant variables

	Controls (±SD)	VVS (±SD)
Mean number of non-coital gynecological problems (e.g. STDs)	0.85 ± 0.69	1.15 ± 0.52
Mean number of gynecological interventions (e.g. laparoscopy)	0.39 ± 0.51	0.54 ± 0.52
Mean number of total yeast infections	4.77 ± 5.75	17.08 ± 18.61*[a]
Mean pain ratings during the cotton-swab test (0–10 scale)	1.10 ± 1.42	6.68 ± 1.72***
Mean pain ratings during speculum insertion (0–10 scale)	0.77 ± 1.88	3.31 ± 3.33*
Mean duration of painful intercourse (months)	–	50.08 ± 38.37
Mean number of professionals consulted for VVS pain	–	5.15 ± 3.08
MPQ total scores for penetration pain	9.39 ± 7.30	34.77 ± 12.39***
PCS scores for general pain	12.54 ± 9.43	16.62 ± 12.46
PCS scores for women with VVS (general vs. intercourse pain)	–	27.39 ± 8.53**
Blank trials – mean percent correct (Experiment 1)	95.58 ± 7.77	97.91 ± 2.84
Blank trials – mean percent correct (Experiment 2)	98.46 ± 5.13	98.89 ± 2.26

[a] $*P < 0.05$, $**P < 0.01$, $***P < 0.001$.

on variables directly related to VVS. The finding that women with VVS reported more yeast infections than control women has been reported in the literature (e.g. Bergeron et al., 1997).

The interval between the first and second tests ranged from 3 to 12 months (mean 9.2 months). Twenty women, 11 controls and nine VVS, consented to a second session; five were lost to follow-up and one had been successfully treated for VVS. In all, there were seven matched pairs, plus four controls and two women with VVS. There were no significant changes in reports of intercourse pain in the VVS group ($P > 0.05$). One woman with VVS had used local anesthetic cream prior to intercourse, but had ended her relationship and sexual activities more than 4 weeks before testing. Cotton-swab pain ratings from the first and second tests did not differ significantly, and they were highly correlated ($r = 0.78$, $P < 0.001$). Mean pain ratings for the cotton-swab test (±SD) remained significantly different between groups (5.61 ± 1.45 and 0.77 ± 1.35 for VVS and controls, respectively, $P < 0.001$).

3.2. Tactile thresholds

The upper and lower panels of Fig. 2 show the tactile thresholds obtained at the two test sessions. As illustrated in the upper panel, vestibular tactile thresholds were dramatically lower in the VVS group as compared with control women. There was a significant group by site interaction ($F_{(5,120)} = 6.14$, $P < 0.001$). In the control group, tactile thresholds were significantly higher at 1 o'clock than at 6 and 9 o'clock and on the labium minus (all $P < 0.05$); the four vestibular sites were significantly less sensitive than the inner thigh ($P < 0.05$). In the VVS group, tactile thresholds for the vestibular sites and the labium minus were significantly lower than those of the control group (both $P < 0.01$), and there were no differences among these sites. The magnitude of the difference between women with VVS and control women for the vestibular sites is more comprehensible when the data are expressed in mg: the average vestibular thresholds were 95 mg (95% CI 64–146) vs. 371 mg (95% CI 247–567) for the VVS and control groups, respectively. Tactile thresholds for the thigh were similar between groups.

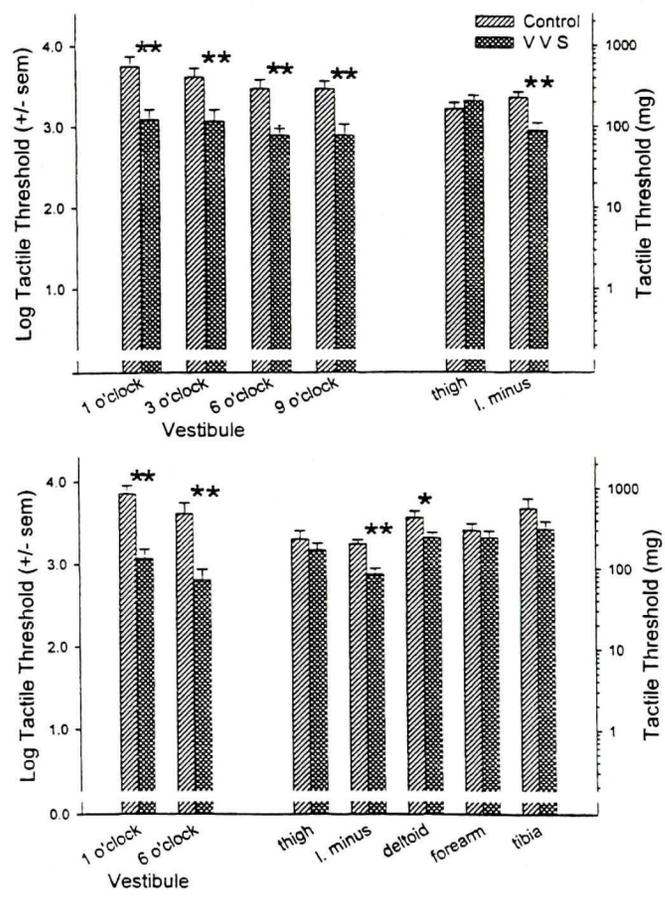

Fig. 2. (Upper) Tactile thresholds (±SEM) at four vestibular sites (1, 3, 6, and 9 o'clock), and the thigh and labium minus on the dominant side of women with VVS ($N = 13$) and controls ($N = 13$) obtained at the first test session. (Lower) Tactile thresholds (±SEM) of two vestibular sites (1 and 6 o'clock), and the thigh, labium minus, deltoid, forearm, and tibia on the dominant side of women with VVS ($N = 9$) and controls ($N = 11$) obtained at the second test session. $*P < 0.05$, $**P < 0.01$.

The lower panel of Fig. 2 shows tactile thresholds obtained in the second session. The average tactile threshold over all sites was 138 mg (95% CI 120–159) and 331 mg (95% CI 263–417) for the VVS and control group, respectively ($P < 0.001$), with a group by site interaction ($F_{(6,108)} = 5.13$, $P = 0.001$). In the control group, vestibular site 1 was the least sensitive site; it was significantly less sensitive than the deltoid, forearm, thigh, and labium minus (all $P < 0.05$). In the VVS group, vestibular site 6 was the most sensitive area, significantly more so than the deltoid, forearm, tibia, and thigh (all $P < 0.05$). Women with VVS had significantly lower tactile thresholds than control women in the following areas: the deltoid ($P < 0.05$), labium minus, and vestibular sites 1 and 6 (all $P < 0.001$). There were no response biases in either group for the first or second tactile threshold sessions as indicated by the mean percent of correct blank trials (see Table 1).

3.3. Stability of tactile thresholds

Tactile thresholds of the thigh, labium minus, and two vestibular sites (1 and 6 o'clock) obtained in the second session were compared with those obtained in the first. All four regions were significantly correlated between studies ($r = 0.46$, 0.66, 0.60, and 0.47 for the four sites, respectively, all $P \leq 0.05$), and there were no significant differences in thresholds between sessions (all $P > 0.05$).

3.4. Pain thresholds

The upper and lower panels of Fig. 3 show the pain thresholds for the vestibular sites, i.e. the value of the filament at the first report of pain. As illustrated in the upper panel, women with VVS had significantly lower pain thresholds around the vestibule than controls (VVS mean 603 mg (95% CI 417–871); control mean 4266 mg (95% CI 3236–5623), $P < 0.001$). This is an underestimate of the actual pain threshold in the control group, because three control women reported no pain, even at the highest stimulus value used (the value of the highest stimulus was used for computing the mean for these cases). There were no threshold differences among the four sites in either group.

There was a significant positive correlation between the tactile and pain thresholds averaged across the four vestibular sites ($r = 0.75$, $P < 0.001$). An ANOVA comparing the averaged pain threshold with the averaged tactile threshold as a covariate indicated that the differences between groups remained significant ($P < 0.001$), with women with VVS reporting significantly lower pain thresholds than control women. The mean pain thresholds adjusted for the covariate were 758 mg for the VVS group and 3388 mg for the control group.

The lower panel of Fig. 3 shows pain thresholds of the sites tested in the second session. Pain thresholds in the VVS group were substantially lower than controls overall, i.e. 2512 mg (95% CI 1445–4365) vs. 7413 mg (95% CI 5370–10233), averaged over all seven sites tested ($P < 0.01$). The group by site interaction ($F_{(6,108)} = 2.56$, $P = 0.05$) indicated differences in the distribution of pain thresholds. In the control group, the pain thresholds were remarkably similar across sites, while in the VVS group the vestibular sites were more sensitive than the other regions, significantly so for the comparisons between vestibular site 1 and the tibia, forearm, deltoid, and thigh (all $P < 0.05$). Most notably, however, the data showed that pain thresholds were significantly lower in the VVS group over most sites.

3.5. Stability of pain thresholds

Pain thresholds of vestibular sites 1 and 6 obtained in the second session were highly correlated with those of the first ($r = 0.81$ and 0.73, respectively, both $P < 0.001$). However, the mean pain thresholds in both groups increased from study 1 to 2 (both $P < 0.05$). The differences were small, with log stimulus value differences between studies of 0.20 (777 mg) and 0.31 (1717 mg) for vestibular sites 1 and 6, respectively. In addition, the change in pain threshold between studies was similar for the VVS and the control groups.

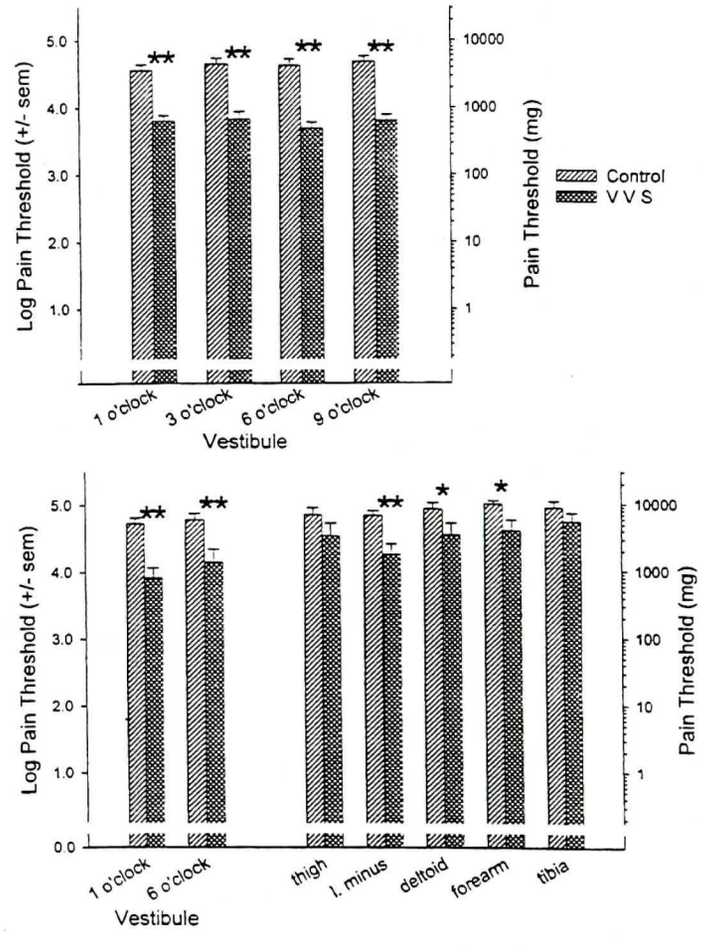

Fig. 3. (Upper) Thresholds (±SEM) for pain produced by punctate stimulation with the filaments of four vestibular sites (1, 3, 6, and 9 o'clock) in the VVS group ($N = 13$) and controls ($N = 13$) obtained at the first test session. (Lower) Pain thresholds (±SEM) of two vestibular sites (1 and 6 o'clock), and the thigh, labium minus, deltoid, forearm, and tibia on the dominant side of women with VVS ($N = 9$) and controls ($N = 11$) obtained in the second test session. *$P < 0.05$, **$P < 0.01$.

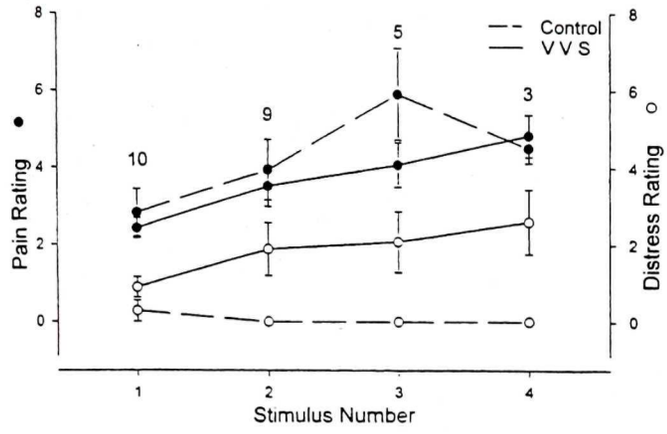

Fig. 4. Mean pain (filled symbols) and distress (open symbols) ratings (±SEM) on the four vestibular sites for consecutive filaments, beginning at the first filament (i.e. stimulus value 1) reported to produce pain – the pain threshold – in women with VVS (solid lines) and controls (dashed lines). The values on the *X*-axis (stimulus values) represent different filaments for each of the two groups. In the control group, three women did not report pain even at the highest filament (stimulus value 4); of the remaining ten subjects, most reported pain at much higher stimulus values than the VVS group. Since control subjects dropped out as they reached the highest stimulus value for all four sites, the number remaining in the control group at each data point is indicated on the graph.

3.6. Pain and distress ratings for suprathreshold pain around the vestibule

When the pain threshold was reached, three further stimuli were applied, and pain and distress ratings were recorded. Fig. 4 shows pain and distress ratings for these stimuli averaged across sites. The actual values of the stimuli for the two groups did not overlap because of the higher pain threshold in the control group, but plotting the ratings by stimulus number emphasizes the response patterns. Both groups' pain ratings increased in a linear fashion with logarithmic increases in stimulus pressure. The pain ratings for the two groups are obviously very similar, with the standard error bars overlapping for most data points. Because of the fact that most of the controls reached the highest stimulus value in three or fewer steps above the pain threshold, the gross inequality of the *N*s precludes statistical analysis. The linear relationship between pain rating and force of the suprathreshold stimuli was computed for each subject if there were at least three measures; this cut-off left 13 VVS subjects and seven controls. The values of the slopes were all positive, and ranged from 0.10 to 0.32 and from 0.09 to 0.32 stimulus number units/unit increase in pain magnitude for the VVS and control groups, respectively. These values are clearly not different ($t = 0.11$, df = 19). In contrast to the similarity of the pain ratings for the two groups, distress levels for women with VVS increased systematically with their pain ratings, while women in the control group consistently rated their distress as 0 for all stimuli. Therefore, while distress ratings are parallel to pain ratings within the VVS group, the control group's distress ratings were very low despite their high pain ratings and high stimulus values.

3.7. Pain and distress ratings in response to sustained pressure

The highest filament used, i.e. three steps above the pain threshold, was applied to the vestibular sites for 40 s. Fig. 5 illustrates pain (upper panel) and distress (lower panel) ratings in response to sustained pressure for both groups. With respect to pain ratings, there was a significant main effect of time ($P < 0.001$), but no significant group effect or group by time interaction. Planned comparisons indicated that the groups differed at 40 s ($P < 0.05$), with women in the VVS group reporting significantly higher pain ratings (mean 2.23) than controls (mean 0.98).

Distress ratings were significantly higher in the VVS group as compared with the control group ($P < 0.05$). There was a significant main effect of time ($P < 0.001$), with distress ratings upon application (mean 1.78) differing significantly from those at 20 (mean 1.22) and at 40 (mean 0.77) s. Planned comparisons indicated that the distress ratings of the VVS group were significantly higher than the controls at 20 and 40 s (both $P \leq 0.05$).

Since averaged pain and distress ratings at each time period were significantly correlated, a 2 (group) × 3 (distress ratings at each time period) ANCOVA was performed with pain ratings treated as a covariate. There

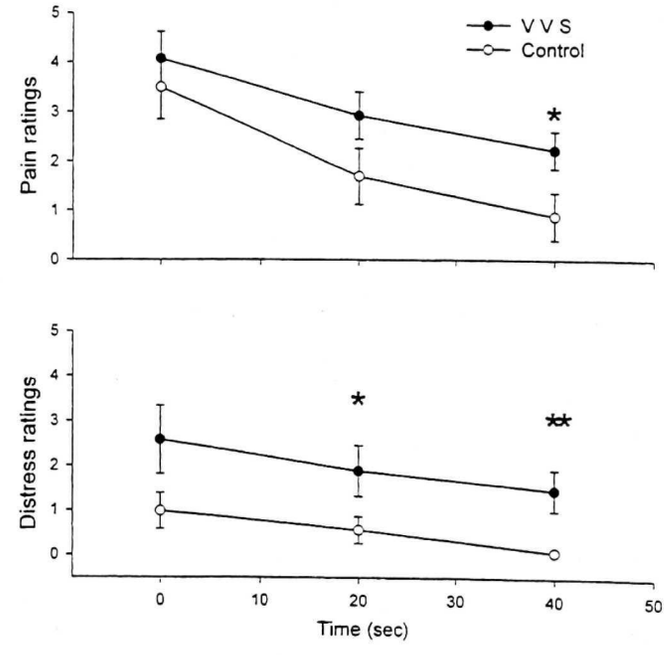

Fig. 5. (Upper) Pain intensity ratings (±SEM) by women with VVS (filled symbols: $N = 13$) and controls (open symbols; $N = 13$) in response to sustained pressure with the filament three steps above the pain threshold, averaged over the four vestibular sites (1, 3, 6, and 9 o'clock). Subjects were asked to rate the pain at the time of application, and 20 and 40 s later. (Lower) Average distress ratings (±SEM) reported at the same time as the pain intensity ratings were made for VVS (filled symbols; $N = 13$) and control (open symbols; $N = 13$) women. $^*P < 0.05$, $^{**}P < 0.01$.

were no significant group differences and no interaction. Planned comparisons on adjusted distress ratings at 40 s remained significant ($P < 0.05$), with women in the VVS group reporting significantly higher distress ratings than control women.

3.8. Pressure-pain tolerance

Pressure-pain tolerance was measured on all subjects over the deltoid muscle, but two women in the VVS group had recent injuries to their knees (surgery in one case, a fall in the other), so the tibial measures were not made on them. As shown in Fig. 6, women with VVS tolerated less pressure in both areas than controls ($F_{(1,22)} = 5.21$, $P < 0.05$). Planned comparisons showed that women with VVS tolerated significantly less pressure over the deltoid muscle ($F_{(1,22)} = 7.98$, $P = 0.01$) but not over the tibia ($F_{(1,22)} = 2.08$, $P > 0.05$) as compared with controls.

3.9. Verbal descriptors of tactile and pain sensation

Words used more than 10% of the time to describe the quality of the sensations are listed in Table 2. Words chosen for tactile sensation were variable, with mild, tingling, and ticklish dominating. Pricking and pinching were somewhat more consistently used to describe pain, in contrast to the burning and incisive qualities typically reported for intercourse pain and the cotton-swab test.

3.10. MPQ and PCS scores

MPQ and PCS scores are shown in Table 1. There were no correlations between MPQ scores for recalled penetration pain with cotton-swab pain ratings, or with tactile or pain thresholds within the groups. PCS scores for general pain were similar for the two groups. However, within the VVS group, PCS scores were significantly higher for intercourse pain than for general pain (see Table 1). PCS scores did not correlate with tactile or pain thresholds, with cotton-swab pain ratings, or with total MPQ scores, either within groups, or overall.

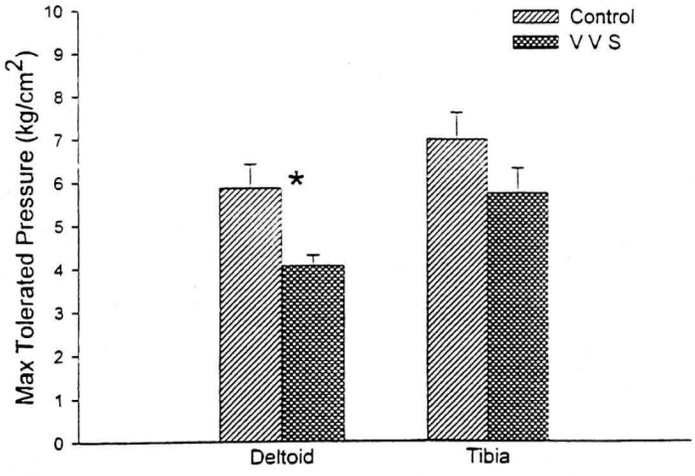

Fig. 6. Maximum tolerated pressure (kg/cm^2; ±SEM) over the deltoid muscle and tibia of controls ($N = 13$) and women with VVS ($N = 13$). Data are averaged across two measures on each side. *$P < 0.05$.

Table 2
Verbal descriptors of vestibular tactile and pain sensation

Words (French translation)	Control (%)	VVS (%)
Tactile sensation		
Experiment 1		
Ticklish (chatouilleuse)	15	14
Mild (légère)	15	11
Prickling (picotante)	14	–
Tingling (picotement)	12	–
Brushing (effleurement)	–	16
Dull (émoussée)	–	10
Experiment 2		
Brushing (effleurement)	10	24
Tingling (picotement)	17	12
Mild (légère)	27	12
Prickling (picotante)	13	–
Ticklish (chatouilleuse)	10	–
Pain sensation		
Experiment 1		
Pricking (qui pique)	32	20
Pinching (qui pince)	12	10
Experiment 2		
Pricking (qui pique)	40	24
Annoying (agaçante)	13	–
Boring (qui perce)	–	14

3.11. Other pains

Despite the similarity in the PCS scores for general pain for the two groups, women with VVS reported suffering from pain in more non-genital sites in the body (Fig. 7; $\chi^2(1, N = 26) = 4.25$, median split point = 2, $P < 0.05$, one tail) than controls. None of the subjects reported having a previous diagnosis of any other pain syndrome.

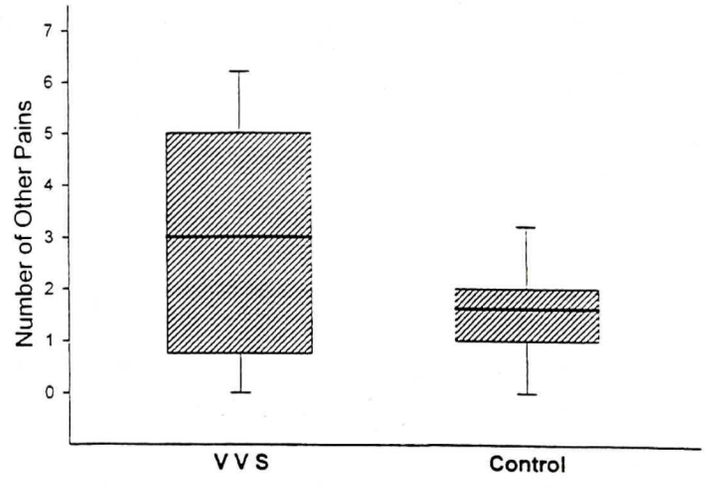

Fig. 7. Box and whisker plots of the numbers of other, non-intercourse related pains reported by women with VVS ($N = 13$) and controls ($N = 13$). The mean and 75th and 25th percentiles are indicated on the plots, with the error bars representing the 5th and 95th percentiles.

4. Discussion

The present study is the first to determine sensory thresholds in female vestibular tissue. The data indicate that the vulvar vestibule is relatively insensitive to punctate tactile stimuli compared to sites on the hairy skin of the arms and legs in the control women. The latter sites are themselves relatively insensitive regions of the body, compared to the face and hands (Weinstein, 1968). Interestingly, the labium minus was the most sensitive of all areas tested for punctate tactile sensitivity. In contrast to the high variability across body regions for tactile sensitivity, the thresholds for pain produced by punctate stimuli were remarkably similar across all body regions tested in control women. This emphasizes the protective role of the pain threshold under normal conditions. None of the regions we tested were on thickened horny skin, in which higher pain thresholds might be expected.

In women suffering from VVS, the thresholds for both tactile and pain sensation in the vulvar vestibule were dramatically lower than in control women. These differences are striking: vestibular pain thresholds of women with VVS were closer to the vestibular tactile thresholds of control women than to their pain thresholds. Thus, stimuli that evoked vestibular tactile sensations in control women produced pain in women with VVS. In addition, women with VVS reported tactile sensations at stimulus levels imperceptible to control women. These findings cannot be explained by the hypothesis that women with VVS anticipated sensation in the vestibular area during tactile testing, because there were no differences in the false positive rate between groups. Moreover, women in both groups described both non-painful and painful sensations with similar descriptors, implying that the sensations had similar qualities despite the differences in sensitivity. The data indicate that the sensory pathology in VVS is not limited to pain, but extends to other somatosensory modalities as well.

In addition to higher sensitivity to tactile and pain stimuli in the vulvar vestibule, women with VVS had lower thresholds on the adjacent labium minus. This is consistent with the finding by Bergeron et al. (2001a) that some women with VVS reported pain in this area during cotton-swab palpation. However, the low tactile and pain thresholds were not limited to the genital region. Women suffering from VVS had significantly lower tactile thresholds than controls on the arm over the deltoid muscle, and trends for lower thresholds over most other sites tested. The pain thresholds for punctate stimuli also tended to be lower over most of the sites tested, again significantly so over deltoid muscle and the volar surface of the forearm. Taken together with the lower thresholds for pressure pain over the deltoid and the tibia, the data suggest that VVS involves a generalized sensory abnormality that is not restricted to the vulvar region or to pain.

Tactile thresholds were virtually identical in the two sessions. However, vestibular pain thresholds increased from the first to the second test session in both groups. Since tactile thresholds were reliable over time, the differences in pain thresholds are unlikely to be due to inaccuracy or changes in the methods. In addition, both groups showed similar increases over time. The most likely explanation for the increased pain thresholds at the second test is that familiarity with the procedure reduced anxiety focused on the testing. This explanation would be consistent with the findings by Rhudy and Meagher (2000) that anxiety lowered pain thresholds, whereas fear focused away from the pain stimulus increased pain thresholds.

4.1. Psychological responses to and descriptions of vestibular pain

Women with VVS and controls reported virtually identical ratings of the sensory intensity of pain for stimuli at and above the pain threshold, i.e. the function relating stimulus intensity to perceived pain intensity was not different for the two groups despite the differences in the pain threshold itself. However, women with VVS reported much higher levels of distress in relation to the sensory intensity of pain. This pattern is typical of chronic pain patients (Price and Harkins, 1992), and it provides an indicator of the significance of pain in the lives of the women suffering from VVS. In the present study, the differences between the VVS group and the controls were increased because most of the controls denied any distress from the suprathreshold stimuli. It is possible that the control group was not typical of 'average normal' women in this regard, because they were selected for never having had pain related to intercourse and very low scores on the cotton-swab test. Nevertheless, the data support the notion that the extensive experience of pain that interferes with function changes the relationship between the sensory experience of pain and the emotional response to pain, even when the pain is episodic. It is probable that it is this aspect of pain that is most influenced by cognitive behavior therapy (e.g. Turner and Clancy, 1986; Turk and Rudy, 1992; Basler et al., 1997).

Women with VVS also had a greater tendency toward catastrophizing about their intercourse pain than about general pain. These results are not surprising since many women suffering from VVS had endured the pain for many years either without treatment or after having undergone several unsuccessful treatments. The intimate and emotionally loaded aspects of this pain syndrome may also contribute to the higher PCS scores. However, the tendency of women with VVS to catastrophize was limited to intercourse pain, and when asked to think about other types of pain, their PCS scores did not differ from those of the control group. This suggests that VVS is not associated with a generalized change in how pain is evaluated, despite the finding of the present study that women with VVS report more non-genital pains, and have been found to disclose more frequent bodily symptoms and complaints (Danielsson et al., 2000), than controls. From the perspective of cognitive behavioral inter-

/entions, this indicates that therapy needs to be focused on he specific problem, and that the issue of responses to pain in general is not particularly relevant.

The tendency for catastrophizing to be specific for the pathological pain problem is also interesting in regard to he catastrophizing questionnaire itself. It has been proposed hat catastrophizing assesses a general characteristic in chronic pain patients (Sullivan et al., 1995). The present data suggest that catastrophizing may not be a general characteristic of pain patients, and that the scale should be applied with reference to more than one kind of pain. Note that when the scale is administered without any specific instructions, it is probable that patients assume it must refer to the presenting chronic pain problem.

The words chosen by both groups to describe both tactile sensations and pain in the vestibular region were rather variable, but the two groups chose similar words (Table 2). The variability may relate to the fact that there is rarely any social discussion of the qualities of sensory experience in the genital region, and there is unlikely to be culturally influenced naming and classification of the sensations. The punctate pain sensations produced in the present study were, however, clearly different from the pain evoked by intercourse in that the descriptors 'burning' and 'cutting' were not chosen frequently by either group. One likely reason is that a very small area was stimulated without motion, a very different experience from a penetrative sexual encounter where the whole vestibular area is stretched and exposed to repetitive friction.

4.2. Comparison of results with existing literature

The tactile thresholds in the present study are about one log unit higher than those given by Weinstein (1968) for comparable sites. One reason for the higher values is that sensory sensitivity declines with age (Stevens and Choo, 1996) and the mean age of Weinstein's female subjects was 3 years lower, and the age range was not as great. More importantly, the number of determinations of the thresholds was lower because of the position necessary to expose the vulvar vestibule for testing, and there would be expected to be more emotional arousal and muscle tension, both of which would be expected to increase thresholds (e.g. Pertovaara et al., 1992). Thresholds obtained also vary according to the contact duration (van Vliet et al., 1993) which may have varied between studies. The thresholds in the present study are very similar to those obtained in other clinical settings. For example, for the two sites innervated by the cervical nerves (volar forearm and over the deltoid), our thresholds were very close to those reported by Voerman et al. (1999) for the cervical dermatomes in normal subjects. In addition, tactile thresholds at the sites that we tested twice 3–12 months apart were very similar, the difference between sessions averaging 54 mg for controls and 17 mg for women with VVS.

The relative insensitivity of the vulvar region to tactile stimuli is consistent with the small amount of data that exists on other mucocutaneous regions such as the areola and nipple in human females (Benediktsson et al., 1997) and the glans penis in male humans and animals (cf. Johnson and Kitchell, 1987). In addition, the sensitivity of the genital region to vibration, which also involves rapidly adapting afferent neurons, is also low compared to other parts of the body (Helström and Lundberg, 1992; Greenspan and LaMotte, 1993). The data imply that, despite the importance of sensory input from the genitals for sexual behavior, the sensory innervation is much less sensitive than other body parts, such as the face and hands.

4.3. Etiological perspectives of VVS

Etiological theories of VVS have focused on two possibilities that are not mutually exclusive. Researchers who classify VVS as a subtype of vulvodynia suggest that treatment include medications that are typically used to treat neuropathic pain (Wesselmann and Reich, 1996). Indeed, the allodynia and hyperpathic or burning quality of VVS pain is consistent with the clinical description of pain associated with peripheral neuropathies, and may be indicative of common processes. However, neuropathic pain is thought to result from damage to, and subsequent loss of, peripheral afferent elements, leading to changes in the central nervous system (CNS) (Bennett, 1994). Damage to afferent neurons would be expected to be associated with impairment of sensory function, as has been observed in postherpetic neuralgia and diabetic neuropathy (Moriwaki and Yuge, 1999; Gottrup et al., 1998). In contrast, the present data suggest that the pathology underlying VVS leads to an increase in sensory sensitivity.

The second proposal for the etiological basis of VVS is that it involves chronic inflammation of the vestibular tissues, with consequent sensitization of primary afferents by inflammatory peptides, prostaglandins, and cytokines (e.g. Pyka et al., 1988; Cox, 1995; Bohm-Starke et al., 1998). A natural extension of this theory is that inflammation leads to sensitization in the spinal cord, with facilitation of nociceptive transmission in the CNS, and development of secondary hyperalgesia around the primary hyperalgesic region (e.g. LaMotte et al., 1991; Woolf, 1993; Sandkuhler, 2000). Allodynia to light touch in the vestibular region and the hyperalgesia on the adjacent labium minus is readily explained by this hypothesis. However, some histopathological studies suggest that inflammatory infiltrates may be relatively common in vestibular tissue, and are not necessarily related to pain (Lundqvist et al., 1997; Slone et al., 1999; but see, for example, Foster and Hasday, 1997; Chadha et al., 1998). It is possible that prolonged inflammation in susceptible individuals leads to changes that are more complex. Two studies have reported increased density of neuropil in vulvar biopsy tissues (Bohm-Starke et al., 1998; Weström and Willén, 1998) of women with VVS, and Bohm-Starke et al. (1999) reported high levels of calci-

tonin gene-related peptide (CGRP) staining. The finding that VVS is associated with allele 2 of the gene encoding the interleukin-1 receptor antagonist further suggests that there are genetic factors that may confer vulnerability to this pain syndrome (Jeremias et al., 2000), and supports the notion of an inflammatory basis for VVS.

The present study indicates that in addition to the hyperesthesia and hyperalgesia in the genital region, women affected by VVS have decreased tactile and pain thresholds on distant body sites. The implication is that VVS involves a generalized alteration of cutaneous sensory sensitivity. This is not to deny that there is also some specific pathology in the vulvar region, since the relative decrease in thresholds in the vestibular region was much greater than for other sites on the body, and the evidence discussed above points to a local inflammatory process. However, the data raise the question as to whether generalized changes in somatosensory function play an important role in VVS.

Generalized changes in pain thresholds have been observed in other chronic pain conditions. Burstein et al. (2000a,b) found that migraine sufferers experience hyperalgesia and allodynia both inside and outside the areas of referred head pain during a fully developed migraine attack, and Okifuji et al. (1997) found that 40% of chronic headache patients reported pain or tenderness at many body locations that are associated with fibromyalgia. Further support comes from studies examining nerve sural reflex in migraineurs (Micieli et al., 1989) and movement-related pain in osteoarthritis patients (Farrell et al., 2000).

Taken together with the current data, these studies imply that there may be a subset of chronic pain patients, including women with VVS, whose primary problem may be either causally related to, or exacerbated by, a generalized disorder of sensory modulation. However, the results from the treatment outcome study by Bergeron et al. (2001b) do not support this idea since the surgery was the most successful treatment. Nonetheless, the findings from the present study support the notion that the pain of VVS may be associated with widespread pain and tenderness, and they have important implications. If pain related to intercourse is the most salient feature of a systemic pain problem, then searching for the etiology in and around the genitals may be misleading. The presence or absence of generalized pain and tenderness may have implications for treatment as well. One possibility is that the response to different kinds of treatments is determined by the extent to which the underlying pathology is restricted to the vestibular region. It is also possible that patients who are referred to specialty pain clinics, i.e. the complicated and refractory cases, are more likely to have coital pain that is superimposed on generalized sensory disregulation, while less severe VVS is a fundamentally different problem.

4.4. Future directions

Further research is needed in order to more fully explain the peripheral and central mechanisms involved in the development and maintenance of VVS. It is important to test women before and after various therapies. The data suggest that thresholds may be useful to assess the progress and nature of effects of therapies such as physiotherapy, psychotherapy, or vestibulectomy, in so far as whether thresholds in surrounding tissues remain the same. Also, testing other somatosensory modalities in the genital region, such as vestibular temperature sensitivity and thresholds to static vs. dynamic touch, will aid in determining what peripheral fibers underlie the pain of VVS. In addition, imaging this pain with fMRI technology will allow us to compare neural activation between women with VVS and chronic pain patients. These types of valuable information which we are currently collecting will provide further definitive proof that VVS is better conceptualized as a pain disorder. The shift in perspective from examining VVS as a sexual dysfunction to studying it as a pain syndrome is more than a semantic one. It will affect: (1) how and which scientists go about studying pain; (2) how and which health professionals treat it; (3) how individuals and their significant others react to the pain; and (4) the way in which larger social institutions address the problem (Hanson and Gerber, 1990).

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Transition Text 2

The results of this study demonstrated that tactile and pain thresholds can be reliably measured in the genital region of women with vulvar vestibulitis syndrome and non-affected women, and provided strong support that vulvar vestibulitis is best conceptualized as a pain disorder. These results provided the foundation for the following paper, which classifies the pain characteristics of vulvar vestibulitis according to the International Association for the Study of Pain criteria. In addition, this paper introduces a new device, a vulvalgesiometer, developed for genital pain assessment.

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Pain Measurement in Vulvodynia

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Current approaches to the conceptualization of vulvodynia focus either on issues of sexuality or underlying pathophysiology but tend to neglect the central symptom of pain. An adequate understanding of this condition will not be achieved, however, without examining all three factors and how they interact. A multiaxial pain approach has provided data regarding the intensity, location, temporal pattern, underlying system, and sensory quality of vulvodynic pain. In addition, standardized vulvar pain measurement techniques, including a new device called a vulvalgesiometer, have been developed, making possible the collection of reliable pain ratings. To date, this approach has been promising for the differential diagnosis, classification, and understanding of vulvar pain conditions.

Current concepts of vulvodynia focus on issues of sexuality or underlying pathophysiology but typically neglect to address the central symptom of pain. In our view, an adequate understanding of this disorder will ultimately require an integration of all of these factors under the rubric of chronic pain syndrome. A useful analogy is low back pain; there are few who would still argue that chronic low back pain could be completely explained by underlying physical factors. Although the inability to function at work is what

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brings many low back pain sufferers to clinical attention, it is not appropriate to conceptualize this problem as a work disorder. We believe that the same reasoning can be applied to vulvodynia. It is unlikely that vulvodynia will be reduced to an underlying physical defect. Moreover, although interference with vaginal penetration and sexual intercourse is often the problem that brings vulvodynia sufferers to clinical attention, it is the pain that typically causes the sexual problem rather than the reverse. Focusing on the pain aspect of vulvodynia requires the examination of both physical and psychological factors; however, the pain component has largely been ignored in the literature.

As a result, our research/clinical group has focused on the definition and measurement of pain as applied to the study of vulvodynia and related conditions. The *Classification of Chronic Pain*, published by the International Association for the Study of Pain (IASP), has inspired much of this work. The IASP defines pain as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage" (Merskey & Bogduk, 1994, p. 210). According to this definition, the experience of pain consists of both sensory and emotional aspects that should be measured separately because they are not always highly correlated. In addition, pain is conceptualized as a subjective experience and, as such, investigators must ultimately rely on patients' self-reports. Although the study of underlying physiology is crucial, it is unlikely to be sufficient for capturing the complex and subjective intra- and interpersonal aspects of the pain experience.

Pains listed in the IASP classification are organized according to 5 major axes: region affected (e.g., vulva, vagina, uterus, ovaries), system involved (e.g., nervous, musculoskeletal, cutaneous), temporal characteristics (e.g., continuous or nearly continuous, intermittent, recurring regularly or irregularly, linked to sensory stimulation or not), patient's statement of intensity (mild, moderate, severe) and duration (time since onset), and finally, etiology (e.g., trauma, inflammatory, infective). Although reported sensory quality of pain (e.g., aching, throbbing, burning, shooting) is not part of the formal classification, the IASP also attaches importance to it. The presumption is that pains sharing similar sensory qualities may also share a common etiology and may require similar treatment.

We have used this framework as a guide for studying a variety of problems loosely termed vulvodynia, dyspareunia, generalized vulvar dysesthesia, dysesthetic vulvodynia, vestibulodynia, vulvar vestibulitis syndrome (VVS), and vaginismus. Different authors use the same diagnostic label to refer to different conditions because the current nomenclature is confusing and fails to differentiate clearly among these conditions. To illustrate this point, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychological Association, 1994) defines dyspareunia as a "recurrent or persistent genital pain associated with sexual intercourse" (p. 513), whereas the International Society for the Study of Vulvar Disease (ISSVD) describes vulvodynia as diffuse, chronic vulvar discomfort that is characterized by com-

plaints of burning, stinging, irritation, and rawness (McKay et al., 1991). In addition, Friedrich's (1987) diagnostic criteria for VVS are severe pain upon vestibular touch or attempted vaginal entry, tenderness to pressure localized within the vulvar vestibule, and physical findings confined to vestibular erythema of various degrees. A recent reliability and validity study examining Friedrich's criteria (Bergeron, Binik, Khalifé, Pagidas, & Glazer, 2001) found evidence supporting the first two criteria; the criterion of erythema, however, did not contribute to the diagnosis of VVS. In this article, we will use the terminology of the authors being cited. We suggest that an examination of the pain characteristics of these conditions will help to clarify this diagnostic labeling confusion.

PAIN INTENSITY

Meana, Binik, Khalifé, and Cohen (1997) were, to the best of our knowledge, the first to quantitatively and qualitatively measure pain in dyspareunia. Using the McGill Pain Questionnaire (MPQ; Melzack, 1975), they tested an undifferentiated group of dyspareunic women. This questionnaire is a 78-item checklist of adjectives that describe pain quality and intensity, and it has been used in hundreds of pain studies throughout the world (Melzack & Katz, 2001). It yields a global pain rating index that reflects the multidimensional nature of pain (e.g., sensory, affective). Although often used to rate pain retrospectively, the MPQ also can be used to rate current pain or pain elicited in an experimental or clinical setting. In Meana et al.'s (1997) study, the pain intensity of dyspareunia was found to be comparable to that of other chronic pain syndromes, such as arthritis, phantom limb, and back pain. These results were replicated in a subsequent study of women with VVS, where Bergeron, Binik, Khalifé, Pagidas, and Glazer (2001) obtained similar pain intensity ratings on the MPQ. The women in this study also rated their overall pain intensity between "distressing" and "horrible."

Bergeron, Binik, Khalifé, Pagidas, and Glazer (2001) also demonstrated the reliability of pain intensity ratings. Women with VVS were asked to rate their pain on a 0 (no pain at all) to 10 (worst pain ever) Likert scale after each palpation during the cotton-swab test. Pain ratings were normally distributed, suggesting that VVS may be best represented as a continuum of pain intensities rather than as an "all-or-none" phenomenon. In an examination of tactile and pain thresholds in women with VVS, Pukall, Binik, Khalifé, Amsel, and Abbott (2002) measured and compared vestibular sensitivity in affected and nonaffected women. The results were striking; vestibular pain thresholds in women with VVS were similar to tactile thresholds of control women. This finding mirrors the actual clinical phenomenon; touching the vestibule with a cotton swab is considered innocuous to nonaffected women, however, this same touch is excruciatingly painful for women with VVS. Taken together, these results indicate that vulvar pain can be very intense,

occurs on a continuum, and can be reliably measured through either retrospective accounts or through experimental conditions with direct genital palpation.

PAIN LOCATION

Location is a crucial descriptive factor in any pain syndrome. Meana et al. (1997) collected retrospective data regarding the location of pain in their undifferentiated sample of women with dyspareunia. Results indicated that dyspareunic pain was experienced in a variety of different locations, such as the in the introitus, vagina, and/or pelvic region. This finding led the researchers to conclude that the term *dyspareunia*, as used in the DSM-IV, encompassed a variety of diagnoses and thus was not a useful diagnostic term. Furthermore, the IASP classification taxons (e.g., location, temporal characteristics), unlike those of the DSM (e.g., lifelong versus acquired, generalized versus situational), differentiated diagnostic groups. These findings illustrate how pain location may serve to distinguish among genital pain syndromes. However, information about pain location and intensity may not be sufficient: Reissing, Binik, Khalifé, Cohen, and Amsel (submitted) have demonstrated that vulvar pain intensity ratings and pain location, as assessed concurrently in a gynecological setting, did not differentiate between women with vaginismus and women with VVS. It has also been our experience that there is a high comorbidity between VVS and deeper pelvic pain, and that women suffering from VVS experience slight pain in the labia minora (Bergeron, 1998). In addition, the importance of muscular involvement in genital pain problems should be assessed (e.g., Bergeron et al., 2002; Glazer, Rodke, Swencionis, Hertz, & Young, 1995; Reissing et al., submitted), but little systematic evidence currently exists. The diagnostic specificity of location and the interaction of different types of pain in the female genitalia need to be studied further.

TEMPORAL PAIN CHARACTERISTICS

Investigations of temporal pain characteristics also have yielded potentially useful findings. In Meana et al.'s study (1997), retrospective reports of pain location and its temporal pattern also predicted diagnosis. The vast majority of women with VVS reported pain onset with the start of penetration, whereas less than 50% of a "no physical findings" group reported pain onset when the penis had fully entered the vaginal canal. Furthermore, most dyspareunic women (60%) reported that the pain lasted throughout penetration and for some time after penile withdrawal, whereas 38% reported pain only during penile thrusting. It is interesting to note that a minority of women (2%) reported that the pain existed prior to actual penetration.

Temporal pain patterns also have been documented in the laboratory setting. In Bergeron, Binik, Khalifé, Pagidas, and Glazer's (2001) study, for example, pain ratings were collected during a clockwise cotton-swab palpation of the vulvar vestibule that began at the 12-o'clock location. Mean pain ratings increased with each successive palpation, thus yielding higher ratings at the 3–6, 6, 6–9, and 9–12 sites than at the 12 and 12–3 o'clock sites (see Figure 1). These results are likely due to sensitization of the vulvar vestibule resulting from repeated palpation at adjacent sites. In Pukall et al.'s study (2002), pain thresholds were examined in four randomized vestibular sites (1, 3, 6, and 9 o'clock) so as not to cause sensitization of the area. No differences in pain sensitivity among these four sites were observed. They did, however, observe a habituation effect in response to painful pressure in both women with VVS and in no-pain controls. Specifically, when a stimulus above pain threshold was applied continuously for 40 s, pain ratings decreased over time. Given these data and their clinical implications, temporal pain patterns appear to be an important factor to consider. It is essential to know whether vulvar pain is linked only to sensory stimulation (e.g., intercourse, tampon insertion) or whether it occurs spontaneously and thereby affects daily activities (e.g., walking, sitting). This distinction typically forms the basis for differentiating VVS from (dysesthetic) vulvodynia; however, its validity has not yet been studied systematically.

PAIN QUALITY

In their undifferentiated dyspareunia sample, Meana et al. (1997) gathered descriptive information regarding the quality and location of pain and obtained reports ranging from a "burning" sensation localized at the entrance of the vagina, to an "aching" sensation over the entire pelvic area. The most

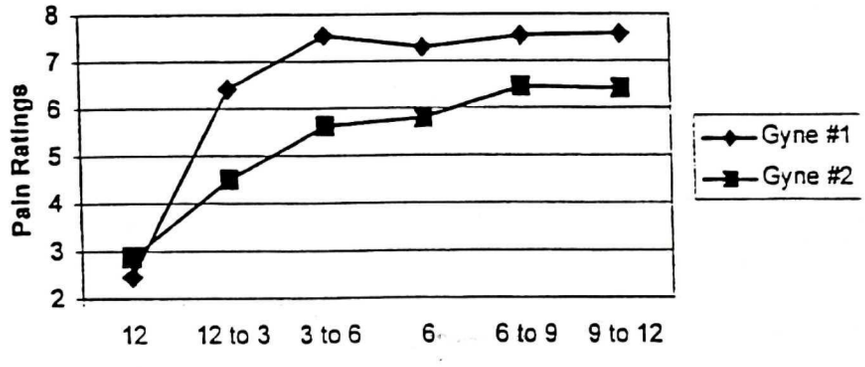

FIGURE 1. Average pain intensity ratings (Y-axis) of women with VVS (N = 126) during a clockwise cotton-swab palpation of the vulvar vestibule (X-axis) by two independent gynecologists (data from Bergeron, Binik, Khalifé, Pagidas, & Glazer, 2001). Although ratings were obtained on a 0 (not painful at all) to 10 (worst pain ever) Likert scale, the range on the Y-axis is from 2 to 8 in order to display the data more effectively.

common sensory pain descriptors endorsed in the McGill Pain Questionnaire were "burning," "sore," and "sharp." In a carefully defined sample of women with VVS, Bergeron, Binik, Khalifé, Pagidas, and Glazer (2001) found that over 90% of the women chose descriptors indicating thermal (e.g., hot, burning, scalding, searing) and/or incisive pressure (e.g., sharp, cutting, lacerating) sensations to describe the pain that they experience during intercourse. This remarkable consistency may prove to be an important taxon for diagnosis, though it does not appear to differentiate women with VVS from those with vaginismus (Reissing et al., submitted).

Understanding the significance of these qualitative reports may prove more challenging. For example, Pukall et al. (2002) elicited a "pricking" and "pinching" type of pain during pain threshold testing with surgical monofilaments as opposed to the cutting/burning pain reported by women with VVS. This difference is most likely due to the small contact area of the filaments, which recruits a small number of receptors compared to other stimuli that commonly come into contact with the vestibule (e.g., penis, speculum). At the moment, it remains unclear whether pain quality is an integral feature of the problem is a result of the stimuli eliciting the pain, or is some combination thereof.

SYSTEMS AND ETIOLOGY

Although little is known about the etiology of vulvodynia, examination and measurement of pain symptomatology has also proven useful in the search for underlying physiological systems involved in VVS and other conditions. Pukall et al. (2002) compared the sensitivity of both vestibular and nonvestibular sites in women with VVS and in no-pain controls. Not only did women with VVS exhibit lower vestibular pain thresholds than control women, they also exhibited lower tactile thresholds. These results suggest that sensory pathology is not limited to pain, but extends to other somatosensory modalities as well, such as temperature, vibration, movement, and distention (Bohm-Starke, Hilliges, Brodda-Jansen, Rylander, & Torebjörk, 2001). These data, and data from other laboratories (e.g., Bohm-Starke, Hilliges, Falconer, & Rylander, 1998; Weström & Willén, 1998), suggest that the peripheral nervous system is involved in the etiology of VVS. Other data, however, support the role of central mechanisms. For example, women with VVS reported lower pain thresholds over the deltoid, labium minus, and forearm (Pukall et al., 2002). Similarly, it has been found that women with VVS report a higher frequency of other pain problems (Danielsson, Sjöberg, & Wikman, 2000; Pukall et al., 2002). Our current speculation is that peripheral trauma may initiate VVS but that central factors may maintain the pain.

The musculoskeletal system has also been implicated in vulvar pain (e.g., Bergeron et al., 2002; Glazer et al., 1995; Reissing et al., submitted).

Specifically, Reissing et al. (submitted) examined the diagnostic reliability of the DSM-IV's vaginal spasm criteria for the diagnosis of vaginismus. Surprisingly, the presence of a vaginal muscle spasm failed to differentiate between women with vaginismus and women with VVS. Women in the vaginismus group, however, exhibited greater pelvic floor muscle tension (i.e., hypertonicity) than both the women in the VVS and no-pain control groups. It is unclear, however, whether musculoskeletal factors are the cause or the result of the pain. Further investigation of the musculoskeletal component involved in vaginismus and other vulvar pain conditions is needed to fully understand how hypertonicity relates to pain.

PROBLEMS WITH EXPERIMENTAL PAIN MEASUREMENT

Although we have emphasized the advantages of direct pain measurement either through retrospective self-report or self-report during direct genital palpation. there are problems with both of these methods. The problems with retrospective self-report are well known and will not be discussed further here (see Jenson & Karoly, 2001). One of the innovations of our approach has been to obtain self-reports of vulvar pain during direct stimulation of the vulva. This approach is derived from the cotton-swab test. which is the main diagnostic test for VVS (Friedrich, 1987). Gynecologists typically diagnose VVS by palpating different sites around the vulvar vestibule in a clockwise fashion and noting the patients' verbal and physical reactions (e.g., Friedrich. 1983). In this procedure, there typically is no systematic patient indication of intensity. As mentioned previously, the unidirectional manner in which the cotton-swab test is performed may produce sensitization. In addition. different gynecologists palpate the area with different pressures, thereby eliciting different pain ratings from the patient (see Figure 1). For these reasons, the cotton-swab test is prone to measurement error when used for experimental purposes or to measure treatment outcome.

One way to determine sensitivity in a body area is to use von Frey filaments. This method is commonly used to measure pain thresholds in patients (Gracely, 1989). These filaments elicit a predetermined pressure when applied perpendicularly to the skin area being tested and bent to form a semi-circle. Because of sterilization concerns, Pukall et al. (2002) have adopted Eliav and Gracely's (1998) method of using disposable filaments made from monofilament sutures, which differ in length and diameter and therefore exert a wide range of pressures. Although they yield highly reliable data and are very useful in a research context to measure tactile and pain thresholds, their use is clinically limited. One such limitation is that the preparation of the filaments and execution of the threshold protocol are very time-consuming. For example, testing four vestibular and five nonvestibular sites can take up to 70 min per participant. In addition, the sensations elicited by

the filaments during pain threshold testing do not replicate the sensations that women with VVS report experiencing during intercourse (Pukall et al., 2002).

In order to overcome these limitations and still have a standardized measure, we have developed an alternative mechanical device called a vulvalgesiometer. The vulvalgesiometer exerts a range of calibrated and predetermined pressures from 3–1000 grams. At the end of the apparatus is a removable and disposable cotton-swab tip. The vulvalgesiometer is cost- and time-effective, easy to use, and therefore useful in both research and clinical settings. It can be used as a diagnostic tool capable of differentiating among women with different types of genital pain, and because of its large range of exertable pressures, it may aid in quantifying the severity of pain (mild, moderate, severe) experienced by these women. This device also has applications in quantifying changes in vestibular sensitivity as a result of treatment.

SUMMARY

Although we can now standardize pain measurement in clinical and experimental conditions, it remains unclear how highly correlated this is to real-life pain. Although removing the pain in women with vulvodynia and related conditions is a crucial step toward recovery, it may not be sufficient in achieving a patient's therapeutic goals. The problem that brings many women to clinical attention is interference with sexuality, or in the case of (dysesthetic) vulvodynia, other life activities as well. Unfortunately, reducing the pain does not necessarily restore sexuality or other life activities. This is illustrated in a recently published randomized VVS treatment outcome study by Bergeron, Binik, Khalifé. Pagidas, Glazer, & Amsel (2001), which showed that although vestibulectomy was superior to group cognitive behavior therapy and biofeedback in reducing pain, it was not better at improving women's sex lives. One of the reasons for this outcome may have been the focus on the sensory rather than on the emotional and interpersonal aspects of pain. Currently, we are working on the equally important emotional aspects of pain by examining such factors as pain-related distress, catastrophizing tendencies (e.g., Pukall et al., 2002), anxiety sensitivity, fear of pain, and hypervigilance. Recent data collected by Reissing et al. (submitted) suggest that fear of vaginal penetration and/or pain may be the best differentiator between VVS and vaginismus. Although we believe that vulvodynia is best classified as a pain syndrome, the functional goal of restoring one's sex life is likely to require specific attention over and above pain reduction. This is consistent with a "vicious cycle" model of chronic (vulvar) pain in which sensory, affective, cognitive, and interpersonal factors influence each other and cause additional pain. Although it is possible to intervene effectively at any point in this

vicious cycle, the most effective treatments likely will require intervention at multiple levels.

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Transition Text 3

This paper introduced a new method of genital pain assessment for women with vulvar vestibulitis syndrome. The following paper consists of the first data collected with the vulvalgesiometer, including pain thresholds, pain intensity and unpleasantness ratings, and adjectives used to describe painful sensations. The following in press manuscript reports the findings of this study.

A New Instrument for Pain Assessment in Vulvar Vestibulitis Syndrome

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RUNNING HEAD: Instrument for Genital Pain Assessment

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Abstract

Vulvar vestibulitis syndrome (VVS) is a common form of dyspareunia in pre-menopausal women. The standard test for diagnosing vulvar vestibulitis is the cotton-swab test, during which a cotton-swab is applied to various locations of the vulvar vestibule. However, there is much variation in the implementation of this test relating to the precise vestibular locations palpated, the order of palpation, and the force used during palpation. A new simple, mechanical device, a vulvalgesiometer, is introduced to help standardize genital pain assessment, and promising preliminary data from women with vulvar vestibulitis syndrome and non-affected women are presented. These data indicate that women with VVS have significantly lower vestibular pain thresholds as compared with control women. During this painful vulvar stimulation with the vulvalgesiometer, women with VVS described the pain with adjectives similar to those used to describe their intercourse pain (e.g., burning). This novel device has several important implications for genital pain measurement in women who suffer from urogenital pain.

Key words: vulvar vestibulitis syndrome, genital pain measurement, vulvalgesiometer, dyspareunia, method

Introduction

Vulvar vestibulitis syndrome (VVS) is a common form of dyspareunia in pre-menopausal women (Bergeron, Binik, Khalifé, & Pagidas, 1997; Harlow, Wise, & Stewart, 2001). Friedrich (1987) proposed the following diagnostic criteria for this condition: 1) severe pain upon vestibular touch or attempted vaginal entry, 2) tenderness to pressure localized within the vulvar vestibule, and 3) physical findings confined to vestibular erythema of various degrees. The diagnosis of VVS is typically based on a patient's self-report of pain at the entrance of the vagina during intercourse, and is confirmed by the cotton-swab test (Friedrich, 1987). However, the specifics of how to perform the cotton-swab test are not well described.

Although it appears to be a simple test to perform, there are many variations in terms of vestibular locations tested, order of palpation, and amount of force used. For example, Goetsch (1991) reports using a water-moistened cotton-swab that she gently rolls over the posterior portion of the vestibule, on both sides of the urethra, and on the mid-line between the urethra and the clitoris. In contrast, the gynecologists in Bergeron et al.'s study (Bergeron, Binik, Khalifé, Pagidas, & Glazer, 2001) distinctly palpate six locations around the part of the vestibule surrounding the hymeneal ring in a clockwise fashion (i.e., 12, 12-3, 3-6, 6, 6-9, 9-12 o'clock) with a dry cotton-swab. We have observed other gynecologists stroking the lower part of the vestibule in order to produce allodynia, and others starting outside the vestibule in a U pattern and continuing with either a clockwise or counter-clockwise pattern once at the vestibule. However, using a clockwise or counter-clockwise pattern of palpation leads to problems as well. As shown in Figure 1, patient pain ratings increase with each successive palpation, regardless of the

gynecologist performing the examination. This is likely due to the sensitization of the vulvar vestibule resulting from palpation at adjacent sites (Pukall, Binik, Khalifé, Amsel, & Abbott, 2002; Pukall, Payne, Binik, & Khalifé, 2003). One way to avoid this confounding of patients' pain ratings is to randomize the order of the areas being tested (Bergeron et al., 2001, Pukall et al., 2003). As illustrated in Figure 2, when the same six vestibular sites are palpated in a randomized fashion, there are no differences among the sites, and no pattern of pain sensitivity around the vestibule. This finding suggests that the portion of the vestibule surrounding the hymeneal ring is equally sensitive to painful pressure in women with VVS, and is contrary to many reports in the literature stating that the posterior region is the area most affected (e.g., Goetsch, 1991).

Figure 1 also illustrates another major limitation of the cotton-swab test. Different gynecologists use different forces when palpating the vulvar vestibule; one gynecologist in Bergeron et al.'s (2001) study palpated each site only once, while the other repeatedly palpated each area (i.e., gynecologist #1 identified by the black squares in Figure 1), leading to significantly higher evoked pain ratings. Moreover, different gynecologists apply different amounts of pressure to the vestibule, and it is unlikely that even the same gynecologist will apply the same pressure to each vestibular area of each of his/her patients (Eva, Reid, MacLean, & Morrison, 1999; Bergeron et al., 2001, Pukall et al., 2003). These differences in location and manner of application may lead to unreliable results when investigating pain severity in vestibular tissue, since a continuum of sensitivity has been found to exist (Bergeron et al, 2001; Pukall et al., 2002).

For these reasons, it is important to recognize that although the cotton-swab test is useful for confirming an initial diagnosis, it is not a standardized method of assessment

since it depends on the type, extent, and manner of pressure exerted by the individual performing the test. Additionally, pressures applied with the cotton-swab test are usually much higher than pain threshold levels, causing unnecessary pain to affected women. To address these limitations, we have developed a pain assessment instrument that is appropriate for use in the genital region and exerts standardized forces.

Description of the instrument

The vulvalgesiometer (Figure 3) is a simple mechanical device that consists of a set of cylindrical, hand-held, pen-like devices that contain springs of varying compression rates. The non-magnetic springs are made from beryllium copper, which ensures the reproducible nature of the force exerted over long periods of time, eliminating the need to replace or recalibrate them frequently. The vulvalgesiometer set exerts a wide range of forces, from 3g to 1kg, with an excellent representation of levels between these two limits (24 values) (see Table 1). At the bottom of each of these devices is a plastic piece that holds a standard-sized cotton-swab. The cotton-swab tip (approximately 4.5 mm in diameter) is placed perpendicularly to the skin area being tested. It is then manually pushed down onto this area until the top of the inner white plastic piece reaches a marked level on the cylindrical casing, exerting a pre-specified level of force. The cotton-swab is easily disposed of and replaced, removing the need for lengthy sterilization processes. We have obtained promising preliminary data using the vulvalgesiometer to measure pain thresholds, in combination with rating scales and a pain adjective list (described below), in women with VVS and non-affected women.

Study Methods

This study was approved by the Institutional Review Board, Faculty of Medicine, McGill University, and written informed consent was obtained from each participant. Potential participants were recruited through local media announcements and from gynecologist referrals. Inclusion criteria for women with VVS were: 1) pain during intercourse which is/was subjectively distressing, occurs(ed) on most intercourse attempts, and had a minimum duration of 6 months; 2) pain limited to intercourse and other activities involving vestibular pressure (e.g., tampon insertion); 3) a mean pain rating of at least 4 on a 0 (no pain at all) to 10 (worst pain ever felt) Likert scale during the cotton-swab test (see below).

The gynecological examination consisted of the following: 1) the cotton-swab test (i.e., the main gynecological diagnostic tool for VVS [Friedrich1987]); this consisted of the palpation of six randomly ordered vestibular sites with a cotton-swab (described in terms of clock positions, with 12 o'clock just below the urethral meatus) that were matched within VVS-control subject pairs: 1 o'clock, between 1 and 3 o'clock, between 3 and 6 o'clock, 6 o'clock, between 6 and 9 o'clock, and between 9 and 1 o'clock; 2) a standard bimanual palpation of the vagina (anterior vaginal wall, pubococcygeal muscle, uterosacral ligament), uterus (cervix and corpus with and without motion), and adnexae (with and without motion). A female research assistant recorded pain ratings on a Likert scale from 0 (no pain at all) to 10 (worst pain ever felt) during the examination.

Participants in the control group were included if they reported pain-free intercourse and had an average pain rating less than 4 on the Likert scale during the cotton-swab test. Exclusion criteria for both groups were any type of past or present

chronic pain condition, pelvic or vaginal pain not clearly linked to intercourse, a history of remitted dyspareunia, major medical and/or psychiatric illness, active vaginal infection, vaginismus, surgical treatment for dyspareunia, or current pregnancy/breast-feeding.

Twenty-eight women (14 women diagnosed with VVS but free from other pathologies, and 14 control women), ranging in age from 19 to 39 (mean age 25.7) and matched on age (± 3 years) and oral contraceptive use (yes or no) met eligibility criteria and participated in a 10-minute sensory testing session. Tactile and pain thresholds were measured at the 6 o'clock location of the vulvar vestibule with the vulvalgesiometer. The cotton-swabs were lightly coated with a water-based lubricant before testing began to prevent skin irritation. The lowest force level exerted by the vulvalgesiometer was applied to the vestibule, and participants were asked to indicate whether they felt it or not. If not, then the next higher force level was applied after an inter-stimulus-interval (ISI) of 15 seconds. The first positive response constituted the tactile threshold. Consecutively higher force levels were applied with the same ISI until pain was reported (i.e., pain threshold). At this point, participants rated pain intensity and unpleasantness on the Likert scale of 0 (no pain at all, not unpleasant at all, respectively) to 10 (worst pain ever felt, most unpleasant ever, respectively) (for a review of rating scales used in pain research, see Chapman and Syrjala, 2001). In addition, women described the sensation using adjectives from the McGill Pain Questionnaire (Melzack, 1975).

Data analysis consisted of the following: Differences between groups were tested using ANOVAs (SPSS 11), with the probability level reflecting the Greenhouse-Geisser

adjustment for heterogeneous covariances when appropriate. Group means ± the standard error of the mean (sem) are presented.

Results

There were no group differences with respect to vestibular tactile thresholds: all women with VVS and 13 of the 14 controls reported feeling the lowest level exerted by the vulvalgesiometer (i.e., 3 g) ($F_{(1,26)} = 1.0, p = 0.3$). However, women with VVS had significantly lower pain thresholds as compared with control women (Figure 4), reporting pain at 16.4 (± 5.4) grams of pressure versus controls at 285.7 (± 86.2) grams ($F_{(1,26)} = 9.7, p < 0.01$). Two control women did not report any pain during the procedure, even at the highest pressure level (i.e., 1 kilogram). Although the two groups did not differ in terms of pain intensity ratings at pain threshold (Figure 5; average ratings of 1.3 [± 0.13] and 1.5 [± 0.29] for the VVS and control groups, respectively), women with VVS reported significantly higher unpleasantness ratings than controls (2.5 [± 0.43] versus 1.43 [± 0.31], respectively; $F_{(1,26)} = 4.1, p = 0.05$). The most frequent adjectives chosen by both groups of women are shown in Table 2 (italicized), with words chosen frequently by one group but not the other included for comparison (non-italicized).

Discussion and Conclusions

Our findings indicate that women with VVS have significantly lower pain thresholds (i.e., high pain sensitivity) and report significantly higher unpleasantness ratings in response to this pain as compared with control women, confirming our previous findings measuring vestibular pain thresholds with filaments (Pukall et al., 2002). It is

apparent that different methods of measurement yield different threshold results and differences in elicited sensations. For example, filaments have a very small contact area; they elicit such tiny amounts of pressure that large differences in sensitivity to touch are found between women with VVS and non-affected women (Pukall et al., 2002). This was not the case in the present study; all women (except one) felt the larger cotton-swab tip of the vulvalgesiometer at the lowest force level. In addition, differences in elicited sensations between methods are found: at painful levels in women with VVS, the filaments elicit adjectives such as "pricking" and "pinching" (Pukall et al., 2002), while the vulvalgesiometer elicits descriptors such as "burning" and "cutting," words reliably used to describe the pain they feel during intercourse (Bergeron et al., 2001).

The vulvalgesiometer and pain threshold method were well tolerated by both groups of women in the study. Using small increments in applied force makes the procedure easy for women with VVS to tolerate, and further demonstrates to them that a stimulus can be applied to the vestibule without causing pain. Overall, the procedure was quick and not highly painful or distressing, unlike other instruments that have been used (e.g., Curnow, Barron, Morrison, & Sergeant, 1996; Morrison, Adams, Curnow, Parsons, Sargeant, & Frost, 1996; Eva et al, 1999; Pukall et al., 2002), including the cotton-swab test. The vulvalgesiometer elicits a wide range of tolerable and reproducible forces regardless of the person performing the test. The non-magnetic springs ensure the reproducible nature of the pressure application over long periods of time, and eliminate the need for frequent replacement or re-calibration. The measurement of applied force in grams is also easily understood without conversion equations. Furthermore, the vulvalgesiometer is cost-effective. Although testing with the vulvalgesiometer may take a

few more minutes than the cotton-swab test, it can be used instead of the cotton-swab test, or in conjunction with it, depending on the needs of the health professional.

The vulvalgesiometer presents several possible avenues of research. For example, careful mapping of vestibular pain thresholds in women with VVS may aid in guiding surgical treatment when excision is limited to tender areas (e.g., Goetsch, 1996). In addition, it may be possible to grade the severity of VVS in order to influence treatment choice; for example, a woman with extremely low pain thresholds may require a more invasive treatment approach than a woman with high pain thresholds. It is also possible to gauge treatment responses with this device in terms of objectively measuring pre- and post- treatment thresholds.

Additionally, the vulvalgesiometer is easy to use; we have trained gynecologists and nurses to use this device in a few minutes. It is currently being used in two large trials, a randomized treatment outcome study and an epidemiological study, and the feedback we have received has been very positive. Data collected with this device will be comparable across studies and will provide normative values regarding sensitivity in various genital and non-genital regions in women with different kinds of genital and vulvar pain conditions (e.g., vulvodynia, vaginismus). Arrangements are currently underway to make this device commercially available.

Acknowledgments

We would like to thank Steve Kecani and Walter Kucharski for their technical expertise regarding the construction of the vulvalgesiometers, and Talia Hoffstein for her assistance in collecting the data.

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Table and Figure Captions

Table 1. Forces exerted (in grams) by each vulvalgesiometer.

Table 2. Adjectives chosen at pain threshold. The three most frequent adjectives chosen by both groups of women at pain threshold stimulation are listed in italics, with the number of women who chose them in parentheses (total N of each group = 14). In addition, adjectives chosen frequently by one group but not the other (non-italicized) are listed for comparison.

Figure 1. Pain ratings during cotton-swab test. Pain ratings (± sem) reported by women with VVS (N = 126) during clockwise palpation of six vestibular sites (described in terms of clock positions: 12, 12-3, 3-6, 6-9, 9-12 o'clock) around the hymeneal ring. The cotton-swab test was performed independently by two gynecologists (gynecologist #1; black squares, gynecologist #2; white squares). Although pain ratings were evaluated on a 0 (no pain at all) to 10 (worst pain ever) scale, the values on the Y-axis are from 2 to 8 in order to display the data more effectively. * $p < 0.001$

Figure 2. Pain ratings during the randomized cotton-swab test. Pain ratings (± sem) reported by women with VVS (N = 14) during a randomized cotton-swab test. Six vestibular sites (described in terms of clock positions: 12, 12-3, 3-6, 6-9, 9-12 o'clock) were tested around the hymeneal ring in a randomized fashion by the same gynecologist (gynecologist #1; black squares) as in Figure 1. Although pain ratings were evaluated on

a 0 (no pain at all) to 10 (worst pain ever) scale, the values on the Y-axis are from 2 to 8 in order to display the data more effectively.

Figure 3. Vulvalgesiometer set.

Figure 4. Vulvalgesiometer pain thresholds. Pain thresholds (i.e., the level of force at which pain was reported, ± sem) in grams, measured with the vulvalgesiometer in women with VVS (N = 14; white bar) and control women (N = 14; grey bar). * $p < 0.01$

Figure 5. Pain intensity and unpleasantness ratings. At pain threshold, the two groups rated pain intensity and unpleasantness ratings. Scores of women with VVS (N = 14) are represented by the white bars, and control women's scores (N = 14) by the grey bars. * $p = 0.05$.

Table 1.

Vulvalgesiometer Number	Force Exerted (grams)
1	3, 5, 10, 15, 20, 25
2	30, 50, 70
3	80, 100, 110, 130, 150
4	200
5	250, 350
6	300
7	400, 500, 650, 750, 900, 1000

Table 2.

VVS (N out of 14)	**Controls (N out of 14)**
Burning (7)	*Pricking (5)*
Sharp (4)	*Pinching (4)*
Pinching (3)	*Annoying (4)*
Annoying (2)	Burning (1)
Pricking (1)	Sharp (1)

Figure 1.

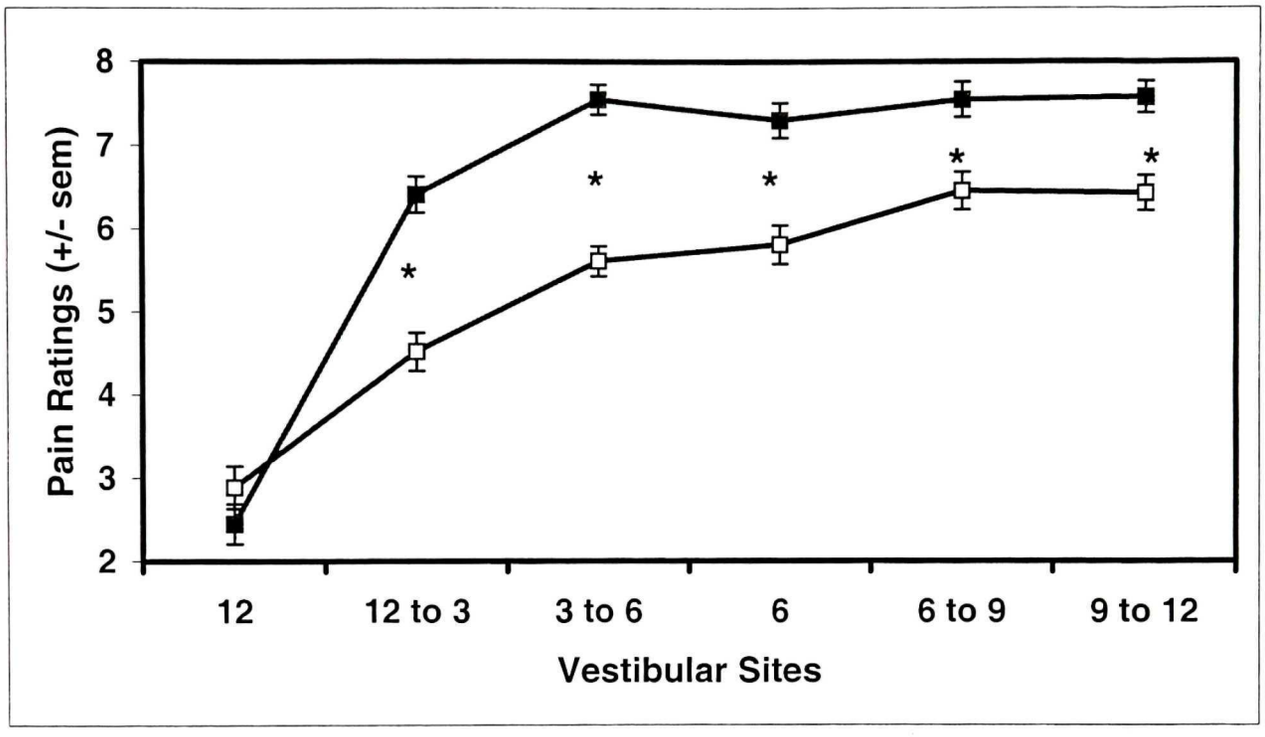
Pain Ratings (+/- sem)
8
7
6
5
4
3
2
*
*
*
*
*
12
12 to 3
3 to 6
6
6 to 9
9 to 12
Vestibular Sites

Figure 2.

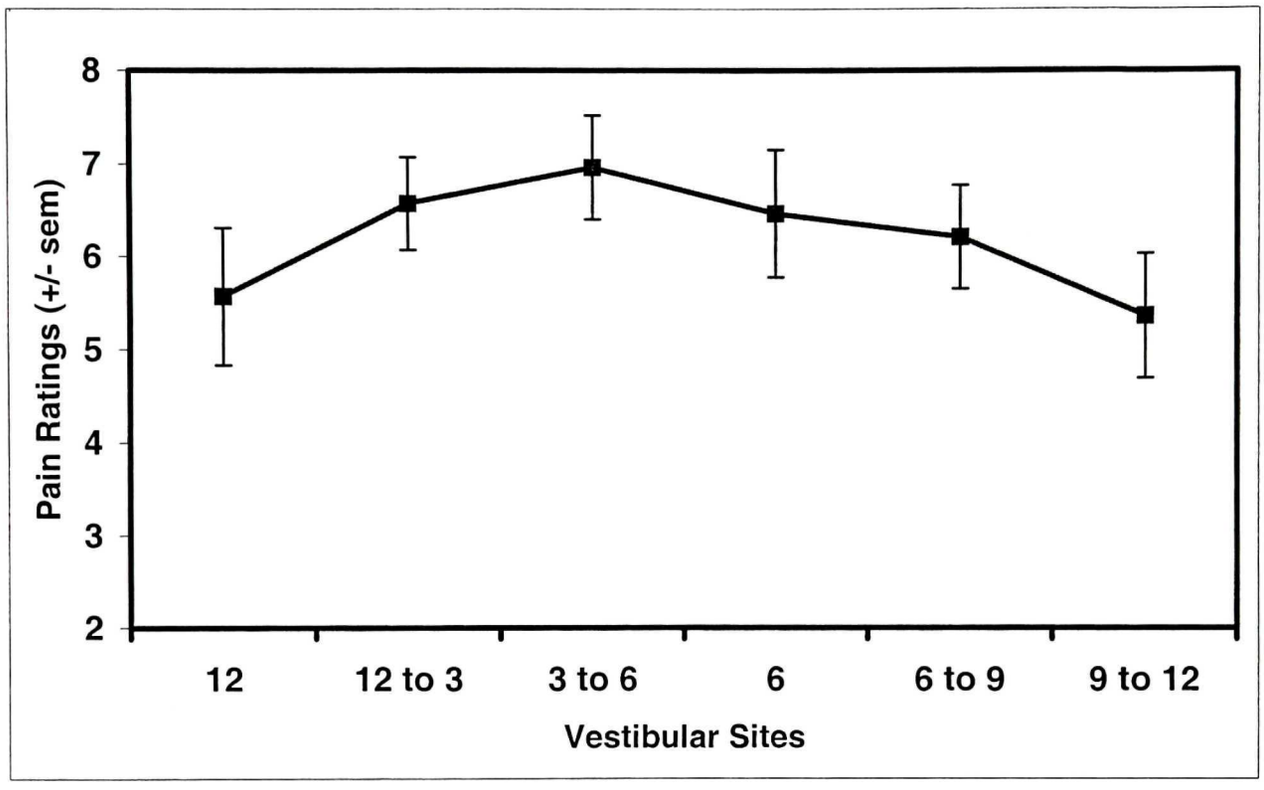
Pain Ratings (+/- sem)
8
7
6
5
4
3
2
12
12 to 3
3 to 6
6
6 to 9
9 to 12
Vestibular Sites

Figure 3.

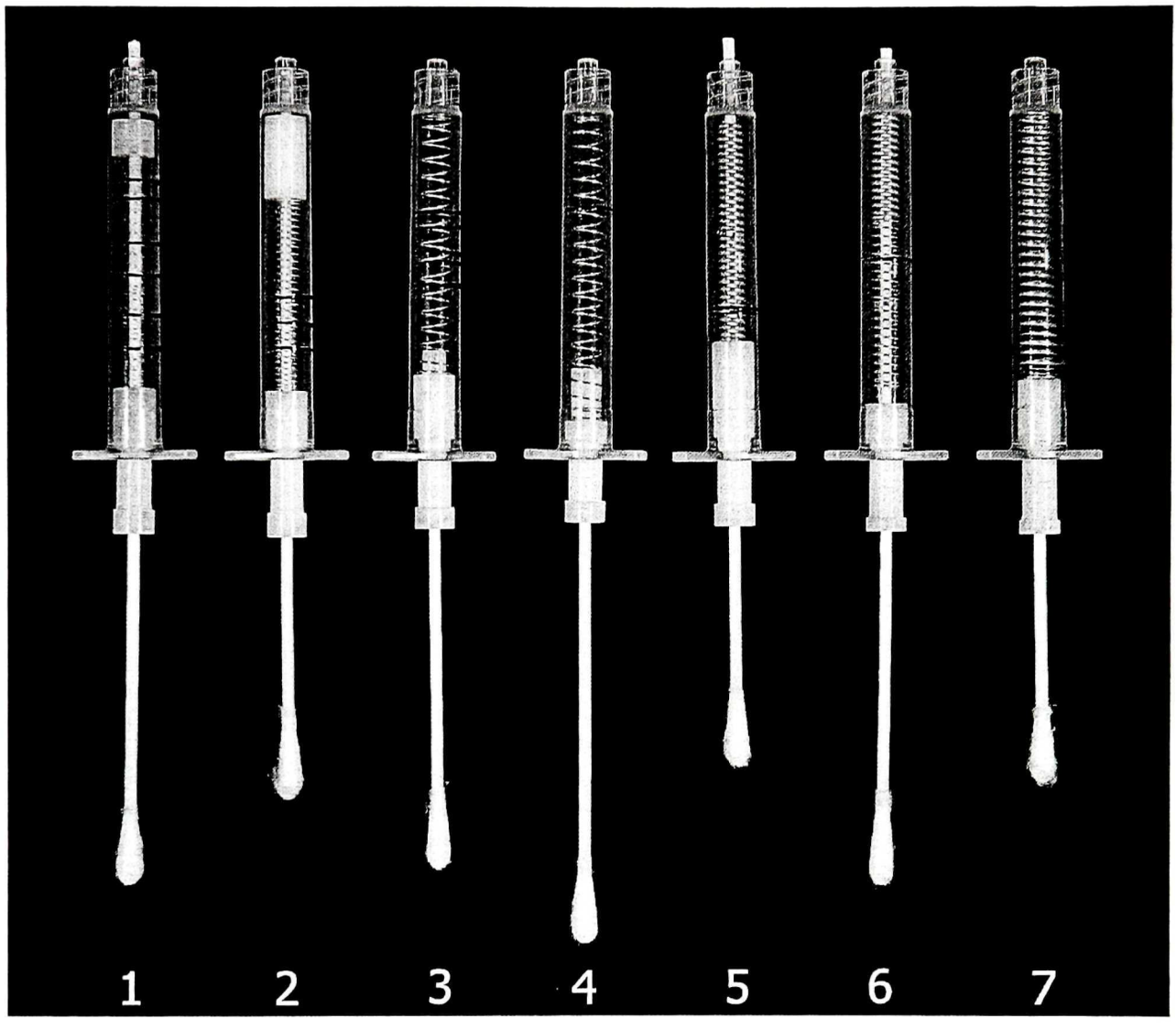

Figure 4.

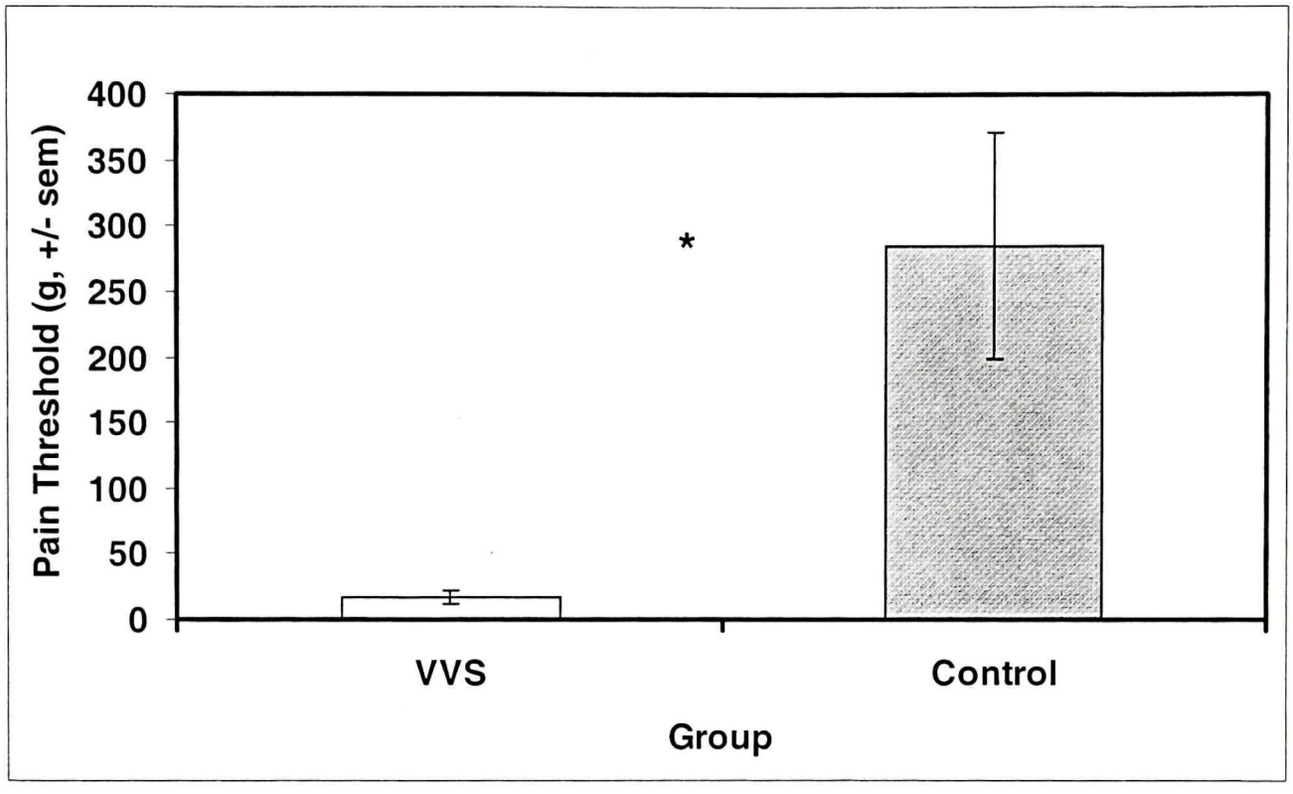
Pain Threshold (g, +/- sem)
400
350
300
250
200
150
100
50
0
*
VVS
Control
Group

Figure 5.

Transition Text 4

Given the promising results yielded with the vulvalgesiometer, we used it to investigate brain activation patterns in women with vulvar vestibulitis syndrome and non-affected women. This was accomplished via functional magnetic resonance imaging of genital touch and pain. The following manuscript reports the results of this study.

Functional magnetic resonance imaging of touch and pain sensation in women with vulvar vestibulitis syndrome

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Abstract

Context: Vulvar vestibulitis syndrome (VVS) is a common cause of painful intercourse in pre-menopausal women. Traditionally viewed as a sexual problem, recent evidence points to the importance of the sensory component in VVS, specifically, heightened processing of vulvar tactile and pain sensation.

Objective: To compare regions of neural activity in women with VVS with those of non-affected women in response to mild and strong genital pressure.

Design, Setting, and Participants: Case-control study of 14 women with VVS and 14 age- and contraceptive-matched pain-free women, aged 19 to 39 (mean age 25.7 years), who participated in a gynecological examination, a psychophysical testing session, and a functional magnetic resonance imaging (fMRI) (1.5 Tesla, standard head coil) scanning procedure.

Main Outcome Measures: fMRI images of brain activity (BOLD signal) comparing mild and strong stimulation conditions relative to baseline within groups, and mild and strong stimulation conditions between groups. Intensity and unpleasantness ratings during mild and strong stimulation conditions.

Results: The mild condition was non-painful for both groups, while the strong stimulation condition was painful for women with VVS but not for non-affected women. For both conditions, women with VVS rated intensity and unpleasantness significantly higher than the control group. These differences were reflected in the associated neural activation patterns; both groups showed neural responses in similar regions, including primary and secondary somatosensory cortices and insular cortex, relative to the no-

stimulation baseline. Women with VVS tended to have significantly higher levels of activity in these regions as compared with non-affected women.

Conclusions: Combined with prior findings that women with VVS have a heightened perception of genital touch and pain, these results suggest that pain experienced by women with VVS results from augmented processing of genital stimulation and support the re-interpretation of VVS as a pain syndrome rather than a sexual disorder.

Introduction

A recent survey estimated that 21% of women under the age of 30 report experiencing consistent pain during intercourse; a condition called dyspareunia[1]. Dyspareunia has a significant negative impact on sexuality; women who suffer from this condition report a significantly lower intercourse frequency, lower levels of sexual desire and arousal, and less orgasmic success than non-affected women[2]. The negative effects of the pain on sexuality have likely had a strong influence on the classification of dyspareunia as a sexual dysfunction, despite the fact that pain is its defining characteristic. For example, the most recent edition of the Diagnostic and Statistical Manual of Mental Disorders published by the American Psychiatric Association (DSM-IV)[3] classifies dyspareunia as a sexual dysfunction; and the International Consensus Development Conference on Female Sexual Dysfunction[4], convened to revise classification and definitional issues of the DSM's sexual dysfunctions, reinforced this categorization. However, there is little justification for this classification since dyspareunia is not a disorder of the sexual response cycle, a central concept to the DSM's definition of a sexual dysfunction. Rather, it is the pain that disrupts sexual activity and often leads to secondary sexual dysfunction[5].

Research examining the pain component of dyspareunia has provided strong evidence that it is best viewed as a pain disorder. Meana et al. (1997), in the first controlled study of dyspareunia[6], found that the pain of dyspareunia was not limited to sexual activity, that criteria used to classify pain disorders (e.g., pain location and onset) were the strongest predictors of presence and type of organicity as compared with DSM criteria (e.g., lifelong versus acquired), and that dyspareunic pain ratings were as high as

those found in other types of chronic pain (e.g., phantom limb, low back, and arthritis pain) on the McGill Pain Questionnaire[7]. In their sample, vulvar vestibulitis syndrome (VVS) was the most prevalent form of painful intercourse.

VVS is believed to be the most common cause of dyspareunia in pre-menopausal women[6] affecting 12% in the general population[8]. Women with VVS experience a severe, cutting/burning pain when pressure is applied to the vulvar vestibule during both sexual and non-sexual activities (e.g., gynecological examinations)[6,9]. The vulvar vestibule is part of the external genitalia; it extends from the inner aspects of the labia minora to the hymen, is bordered anteriorly by the clitoral frenulum and posteriorly by the fourchette, and includes the vaginal and urethral openings[10]. The vestibule is innervated by the pudendal nerve[11] and contains free nerve endings, the majority of which are believed to be C-fibers[12]. Although the vulvar vestibule is by definition visceral tissue, it has a non-visceral innervation[13]. Thus, sensations of touch, temperature, and pain are similar to sensations evoked in the skin. Women with VVS report more functional interference with their sex lives as compared with any other group of dyspareunic women[6]. While the etiology of VVS remains elusive[for reviews, see 14-5], controlled studies of this condition suggest that altered pain processing plays a role in its development and/or maintenance[e.g., 16-7].

Evidence of altered physiological pain mechanisms has been found in controlled examinations of vestibular tissue in women with VVS. These include a heightened innervation density of nerve fibers[12,18], an increase in blood flow and erythema[19], the presence of calcitonin gene-related peptide[20] and inflammatory mediators[21-2], and nociceptor sensitization[16]. In addition, we have previously demonstrated that women with

VVS have significantly decreased thresholds to both painful and non-painful vestibular stimulation[17]. While this line of evidence points to the importance of peripheral processes involved in VVS, additional evidence indicates that central nervous system factors also play a role. Women with VVS report more somatic pain-related complaints than non-affected women[17,23], and have lowered mechanical and heat pain thresholds in non-genital body areas[17,24], suggesting that a general, possibly central nervous system disorder, underlies VVS.

Functional magnetic resonance imaging (fMRI) provides an opportunity to examine central nervous system activity underlying increased sensitivity to touch and pain in women with VVS. Human imaging studies of touch have implicated several brain areas involved in the processing of tactile information, including primary and secondary somatosensory cortices (S1 and S2), and the insular cortex (IC)[e.g., 25-35]. Likewise, human studies of the cerebral mechanisms of pain have identified several cortical structures important in pain processing, including S1, S2, IC, and the anterior cingulate cortex (ACC)[e.g., 25, 36-47]. Imaging has also been used to prove the legitimacy of pain disorders thought to have a psychosomatic basis, such as fibromyalgia[48], by comparing neural activation of clinical populations in response to pain with activation of non-clinical populations.

In the current study, fMRI was used to characterize the pattern of increased regional cerebral blood flow (rCBF) produced when non-painful and painful pressures are applied to the posterior portion of the vulvar vestibule in 14 women with VVS. These patterns of responses are then compared with those evoked by the same physical pressure level in 14 non-affected women. The primary goal of this study was to compare activity

in brain regions processing genital touch and pain between women with VVS and non-affected women. In particular, we wanted to demonstrate evidence of augmented central processing of sensory information in women with VVS, as suggested by our previous psychophysical findings[17] in the form of increased activity in responsive regions. Findings of this nature would provide further support for our assertion that VVS is best viewed from the multidisciplinary pain perspective proposed by Melzack and Casey[49].

Methods

Participants and Screening Procedures

This study was reviewed and approved by the McGill Institutional Review Board of McGill University and the Research Ethics Committee of the Montreal Neurological Institute, and written informed consent was obtained from each participant. Potential participants were recruited through local media announcements and from gynecologist referrals. Inclusion criteria for women with VVS were: 1) pain during intercourse which is/was subjectively distressing, occurs(ed) on most intercourse attempts, and had a minimum duration of 6 months; 2) pain limited to intercourse and other activities involving vestibular pressure (e.g., tampon insertion); 3) a mean pain rating of at least 4 on a 0 (no pain at all) to 10 (worst pain ever felt) Likert scale during the cotton-swab test (see below).

The gynecological examination consisted of the following: 1) the cotton-swab test (i.e., the main gynecological diagnostic tool for VVS[50]), this consisted of the palpation of six randomly ordered vestibular sites with a cotton-swab (described in terms of clock positions, with 12 o'clock just below the urethral meatus) that were matched within VVS-control subject pairs: 1 o'clock, between 1 and 3 o'clock, between 3 and 6 o'clock, 6

o'clock, between 6 and 9 o'clock, and between 9 and 1 o'clock; 2) a standard bimanual palpation of the vagina (anterior vaginal wall, pubococcygeal muscle, uterosacral ligament), uterus (cervix and corpus with and without motion), and adnexae (with and without motion). A female research assistant recorded pain ratings on a Likert scale from 0 (no pain at all) to 10 (worst pain ever felt) during the examination. Participants in the control group were included if they reported pain-free intercourse and had an average pain rating less than 4 on the Likert scale during the cotton-swab test. Exclusion criteria for both groups were left-handedness, metallic implants, a history of serious neurological disease, brain injury, regular medication use that could potentially interfere with cerebral blood flow, any type of past or present chronic pain condition, pelvic or vaginal pain not clearly linked to intercourse, a history of remitted dyspareunia, major medical and/or psychiatric illness, active vaginal infection, vaginismus, surgical treatment for dyspareunia, or current pregnancy/breast-feeding.

Twenty-eight women (14 women diagnosed with VVS but free from other pathologies, and 14 control women), ranging in age from 19 to 39 (mean age 25.7) and matched on age (± 3 years) and oral contraceptive use (yes or no) returned for a brain scanning session, which took place at the Montreal Neurological Institute. Participants refrained from smoking, drinking caffeine or alcoholic beverages, and taking analgesic medication for 24 hours prior to scanning.

Stimulation and Rating Scales

Mild and strong stimulation of the posterior portion of the vulvar vestibule were achieved with a vulvalgesiometer[51], a non-magnetic mechanical device designed specifically for genital sensory testing that allows the exertion of standardized pressure

levels with cotton-swabs (Figure 1). The contact area of the cotton-swab tip is approximately 4.5 mm in diameter and was lightly coated with a water-based lubricant before scanning to prevent vulvar irritation.

Mild and strong pressure levels were chosen prior to imaging during a preliminary session in which participants were introduced to the pressure stimuli and trained to rate the perceived intensity and unpleasantness using two scales. On the intensity scale, 0 was "no sensation," 10 denoted "painful sensation," and 20 indicated an "extremely intense pain sensation." In addition, a separate unpleasantness scale was used[52], with 0 denoting "not at all unpleasant" and 10 being "extremely unpleasant." For women with VVS, the force level at which non-painful touch was perceived was chosen for the mild stimulation runs, while the force that produced a moderate but tolerable level of pain (i.e., 14-16 on the intensity scale) was used for the strong stimulation runs. Control participants received the same pressure level as their matched VVS counterparts for both the mild and strong stimulation conditions in order to directly compare brain activations between groups; control women did not experience pain during any of the scans although they were able to clearly perceive the levels of stimulation used.

Data Acquisition

Imaging was performed at the McConnell Brain Imaging Center at the Montreal Neurological Institute (MNI) using a 1.5 Tesla Siemens Vision scanner (Siemens Medical Systems, Evlangen, Germany) with a standard head-coil. Anatomical scans were recorded using a high-resolution T1-weighted anatomical protocol (TR=22 ms, TE=20 ms, flip angle=30°, FOV=256 mm). The functional scans were collected using a BOLD (blood oxygen level dependent) protocol with a T2*-weighted gradient echo-planar

imaging (EPI) sequence (TR= 4.0 s, TE=51ms, flip angle=90°) yielding a 4x4 mm in-plane resolution. The scanning planes were oriented parallel to the anterior commissure-posterior commissure line and covered the whole brain from the top of the cortex to the base of the cerebellum (36 slices, 4 mm thickness). Individual scans consisted of 114 whole brain volume acquisitions, divided into 18 cycles. Each woman participated in one imaging session that consisted of one anatomical and 4-6 functional scans. Imaging sessions started with mild followed by strong stimulation runs to avoid the possible effect of sensitization induced by the noxious stimulation in the VVS group.

All participants wore earplugs to decrease the noise generated by the MRI machine. Before being positioned in the scanner, all subjects were instructed to attend to the stimuli and refrain from movement as much as possible. To further prevent movement artifacts, the head was immobilized with a vacuum beanbag pillow, padded earmuffs, and a plastic bar across the bridge of the nose. In order to expose the posterior portion of the vulvar vestibule for stimulation during the functional scans, women bent their knees and rested their legs on the outside curve of the tunnel, and the labia were separated by the experimenter performing the stimulation. The average pressures for both groups during the mild and strong stimulation conditions (+/- sem) were 3.8 g +/- 0.3 and 21 g +/- 3.6, respectively. Each functional scan (i.e., run) started with six volume acquisitions of no stimulation, after this, each cycle consisted of three successive acquisitions of 12 sec without stimulation followed by 12 sec with either mild or strong stimulation, and ended with 12 sec of no stimulation (Figure 2). After each run, participants verbally rated the intensity and unpleasantness of the sensation on the appropriate rating scales.

Image Processing and Data Analyses

Functional data were motion-corrected and low-pass filtered with a 6-mm FWHM Gaussian kernel in order to increase the signal-to-nose-ratio; the first three volumes of each functional scan were excluded to ensure steady-state condition. All images were resampled into stereotaxic space[53]. Functional and anatomical data were then merged to locate regions of globally significant activation. T-statistic images representing changes in hemodynamic response were generated using fMRISTAT-MULTISTAT software developed at the MNI, Montreal, Canada. This analysis yields t-statistics based on a linear model using random field theory, correlated errors, and Bonferroni correction. The procedures have recently been described in detail[54].

Briefly, this analysis uses a linear model based on a regressor defined by the external stimulus events convolved with a pre-specified hemodynamic response function. The linear model is fit to a single run of fMRI data, allowing for spatially varying autocorrelated errors. Statistical output from different runs during a session are then combined using a type of random effects analysis. Data were also corrected for temporal correlation, artifactual drift and random effects. The resulting t-statistic images were thresholded ($P = 0.05$) using the minimum given by a Bonferroni correction and random field theory[55-6]. For mild and strong stimulation conditions, t-statistic maps represented the difference in BOLD signal between the stimulation and baseline (i.e., no stimulation) conditions in each group. These activation maps were then compared between groups to investigate differences between VVS and control women in response to mild and strong stimulation.

The volume of the whole brain was estimated to be 1200 cm^3 (150 000 voxels), yielding a threshold t-value of 4.5 for the global search. As mentioned above, one major goal of this study was to compare activation between the VVS and control groups. Therefore, regions that initially showed no difference in response between groups, but in which one group showed a significant response relative to baseline in the global search, were further analyzed using unique t-statistic thresholds: Unique thresholds were also used to compare hemodynamic responses between the groups in particular regions based on prior research (see below). These thresholds were used to maximize power, and were based on the variability of the brain location of each individual's activity (minimum peak activity, t = 1.7[57]) within each brain region[31]. These analyses are based on our hypothesis that the increased responsiveness of the VVS group to touch and pain stimuli in the vestibule[17] may be reflected in augmented neural activity. A total of 20 scans (10 from each group) for the mild stimulation condition and 40 (20 from each group) for the strong stimulation condition were free from motion artifacts and were psychophysically sound, and were therefore used in the appropriate analyses. Data were not analyzed for negative stimulus correlations. Coordinates of brain areas were determined by using the atlas by Talairach and Tournoux[58].

In the mild stimulation condition, directed searches comparing BOLD responses between VVS and controls groups were performed in S1, S2, and the IC regions based on prior imaging research investigating tactile stimulation[e.g., 25-35]. Additional brain regions that were significantly activated in at least one group were compared between groups, including bilateral dorso-medial pre-frontal cortex (BA6) and the cerebellum. The volumetric range of peak response levels across individuals for each area were: left S1,

1.0 cm^3 (16 voxels); left S2, 1.4 cm^3 (23 voxels); left mid-posterior IC, 3.0 cm^3 (48 voxels); left BA6, 1.3 cm^3 (21 voxels); right BA6, 1.7 cm^3 (27 voxels); and right cerebellum, 5.5 cm^3 (87 voxels). These yielded t-statistic thresholds values of 2.7, 2.9, 3.1, 2.8, 2.9, and 3.3, respectively.

Because women with VVS reported pain (see Results) during the strong stimulation condition while non-affected women did not, directed searches comparing BOLD responses between groups were performed in S1, S2, IC, and the ACC, brain regions previously shown to be active in response to pain[e.g., 25, 36-47]. The following regions that were significantly activated in at least one group were also compared between groups: bilateral BA6, basal ganglia, and bilateral Area 44. Volumetric range of peak response levels across individuals for each area were: left S1, 9.0 cm^3 (140 voxels); left S2, 3.2 cm^3 (50 voxels); right S2, 5.2 cm^3 (82 voxels); left anterior IC, 1.5 cm^3 (24 voxels); right anterior IC, 3.4 cm^3 (54 voxels); left mid-posterior IC, 4.4 cm^3 (69 voxels); right mid-posterior IC, 3.2 cm^3 (51 voxels); left BA6, 2.8 cm^3 (44 voxels); right BA6, 4.8 cm^3 (75 voxels); left basal ganglia, 9.5 cm^3 (149 voxels); left area 44, 3.8 cm^3 (60 voxels); and right area 44, 4.0 cm^3 (63 voxels). Resulting t-statistic threshold values were calculated to be 3.4, 3.1, 3.2, 2.9, 3.1, 3.2, 3.1, 3.1, 3.2, 3.4, 3.1, and 3.2, respectively.

Results

Psychophysical Ratings

Figure 3 shows post-scan psychophysical ratings for the mild (Figure 3A) and strong (Figure 3B) stimulation conditions after vestibular stimulation with the vulvalgesiometer. For the mild stimulation condition, women with VVS rated both the intensity (VVS mean = 6.4 vs. control mean = 2.3; $F(1,19) = 6.6$, $p < 0.05$) and

unpleasantness (VVS mean = 3.7 vs. control mean = 0.2; $F(1,19) = 32.2$, $p < 0.001$) of the stimulation as significantly higher than non-affected women. The same pattern is seen in the strong stimulation condition: women with VVS rated the stimulation as consistently painful, therefore, their intensity ratings were significantly higher than non-affected women, all of whom found the stimulation to be non-painful (VVS mean = 15.1 versus control mean = 3.0; $F(1,38) = 415.3$, $p < 0.001$) despite the equivalent pressure levels between groups. Not surprisingly, the associated unpleasantness ratings were also significantly higher in the VVS than in the control group (VVS mean = 5.4 vs. control mean = 0.6; $F(1,38) = 88.0$, $p < 0.001$). These results confirm our previous psychophysical findings[17].

Cerebral activity associated with the mild stimulation condition

Table 1 summarizes the regions of increased BOLD responses during the mild (i.e., tactile) stimulation condition in response to genital stimulation in both groups. In the VVS group, clusters of voxels showing significant global activation to stimulation relative to baseline were found in bilateral BA6, the right cerebellum, left lateral S1, and left S2. The left mid-posterior IC showed a significant response relative to baseline in the control group. Between-groups comparisons revealed significantly higher activation in the right cerebellum in the VVS versus the control group in response to tactile stimulation. Although no other significant between-groups differences were found, Table 1 indicates that the same brain areas are activated in both groups in response to mild stimulation, with augmented activation in women with VVS as compared with controls for all sites except the left mid-posterior IC.

Cerebral activity associated with the strong stimulation condition

Table 2 summarizes the regions of increased cerebral activity during the strong stimulation condition in response to painful vestibular stimulation in the VVS group, and during the application of equal pressure levels, perceived as non-painful, in controls. Clusters of voxels showing significant global activation to strong stimulation were revealed in the following areas in the VVS group: bilateral S2, bilateral mid-posterior IC, left basal ganglia, left lateral S1, bilateral BA6, bilateral BA44, left BA40, bilateral anterior IC, and right BA43/42. In the control group, significant global activation was observed in left S2, left mid-posterior IC, and right Area 6. Comparisons of responses between groups revealed significant differences in bilateral mid-posterior IC, bilateral BA6, and left anterior IC. Trends towards significance were found in left S2 and the left basal ganglia. Again, a large overlap in regions of activity is found in both groups, with augmented response in women with VVS at every site. Although the left ACC did not reach significance in the global or directed searches or between groups, women with VVS showed activation in this area while control women did not.

Discussion

To the best of our knowledge, this is the first study to examine neural activation patterns in response to punctate stimulation of the vulvar vestibule in women with VVS and non-affected women. This study is also the first to demonstrate that stimulation of the vulvar vestibule activates an area in lateral S1 representing the hand/face area on the homunculus proposed by Penfield and Rasmussen[59] (see below). The results of the present study indicate that neural activation in response to mild and strong genital stimulation activates cortical and sub-cortical brain areas in agreement with patterns of

activation found in previous studies examining touch and pain sensation in other body areas (e.g., leg, hands) in response to different types of stimulation (e.g., thermal, vibratory). These results suggest that women with VVS process tactile and painful genital stimulation in an expected fashion.

In addition, we demonstrate that, in response to mild and strong levels of vestibular stimulation, highly similar brain regions are activated in both the VVS and control groups. However, women with VVS tend to have a higher level of activation in every region, indicating that sensory processing of genital sensation in women with VVS is augmented. This finding is consistent with our present and previous psychophysical findings[17] that women with VVS have heightened touch and pain perception. The most striking of the current results is that the same pressure used in the strong stimulation condition evoked completely different perceptual experiences in both groups (i.e., that of not unpleasant touch in control participants and that of highly unpleasant pain in women with VVS), and that this is reflected in differences in regional brain activation levels between the groups. This finding replicates the clinical phenomenon of VVS: activities involving the application of pressure to the vestibule (e.g., cotton-swab test) are extremely painful and highly distressing for a woman with VVS, but are considered neither distressing nor painful by non-affected women[60]

Our current findings with respect to brain activation in women with VVS compared to control women are consistent with findings from previous imaging studies examining brain regions activated in response to tactile and painful stimulation. Women with VVS show heightened response on brain regions comprising the components of the "pain signature," brain regions reliably activated by painful stimulation in imaging

studies[61]. The pain signature includes activation of S1 and S2, the former of which contains the representation of the body area that is being stimulated. In the present study, both the VVS and control groups demonstrated activation of lateral S1 in response to stimulation of the vulvar vestibule at mild (Figure 4) and strong (Figure 5A) pressures. When this placement was compared to the homunculus proposed by Penfield and Rasmussen[59], it was located in the region defined as representing the hand and face. This is in contrast to the reported location of the genital representation as being deep on the medial wall ventral to the toe region. Although additional evidence indicates that the representation of the external genitalia exists in the medial wall in the human and monkey S1[62-4], other genital representations, specifically the region of S1 lateral to the foot and leg region in humans[65] and monkeys[66-7], have been reported. These findings suggest that multiple representations of the genitalia may exist[66]. However, representations of specific areas of the genitalia in male and/or female humans and/or monkeys have yet to be explored in a consistent manner.

With respect to S2 activation in the present study, both the mild (see Figure 4 for activation in women with VVS) and strong (Figure 5A) stimulation conditions resulted in activation of S2 cortex. Our results demonstrate a differential involvement of S2 in the processing of genital touch and pain in women with VVS. Although non-painful stimulation resulted in significant activation of left S2, painful genital stimulation produced higher and bilateral activation of this region, supporting the S2 component of the pain signature in women with VVS. This activation is consistent with the results of other studies examining touch and pain sensation[e.g., 25-29, 31-38, 45, 47], and is in agreement

with Becerra et al's[29] findings suggesting that there is a graded response of neural activation in response to increasing stimulus intensity.

In addition to S1 and S2, numerous human brain imaging studies show activation of posterior and anterior IC during both non-painful and painful stimulation conditions[e.g., 25, 27, 32, 34-5, 38-9, 41-2, 44, 47, 68-9]. Consistent with the pain signature of active brain regions, our results indicate a differential involvement of the mid-posterior IC in the processing of mild and strong stimulation. While the mild stimulation produced responses in the left mid-posterior IC (see Figure 4 for activation in control women), the strong stimulation condition resulted in bilateral activation of this area (Figure 5B for activation in both groups). In addition, although the anterior IC was not significantly activated in the mild stimulation condition in either group, this region demonstrated a bilateral response during the strong stimulation condition in women with VVS.

Activation of the ACC, also a component of the pain signature, has been shown to correlate with the affective dimension (e.g., unpleasantness[41]) of the pain experience. Although ACC response was not significantly different between groups, women with VVS demonstrated activation in this area that was not present in the control group. Women with VVS had significantly higher unpleasantness ratings during painful stimulation of the vulvar vestibule, and the activation of the ACC is consistent with this and previous findings, including higher catastrophizing scores in response to their vulvar pain and higher unpleasantness ratings in response to non-painful and painful genital stimulation[17], and higher anxiety levels in this group of women[24]. It is likely that significant ACC response would have been observed if the painful stimulation had been at more intense levels.

Conclusions

The present study provides evidence that brain regions active during painful genital stimulation in women with VVS mirror those consistently activated during other painful experiences. Results of the present study demonstrate that women with VVS experience genital stimulation differently from control women, and this is reflected in their consistently augmented neural responses. In addition, the current results call for a re-attribution of somatosensory cortical regions representing the various regions of the genital area. Overall, the results of the current study support the perspective that VVS is a pain problem as opposed to a primarily sexual one.

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Analysis and interpretation of data: Pukall, Strigo, Bushnell

Drafting of the manuscript: Pukall, Strigo, Binik, Bushnell

Critical revision of the manuscript for important intellectual content: Pukall, Strigo, Binik, Khalifé, Bushnell

Statistical expertise: Strigo

Obtained funding: Binik

Administrative, technical or material support: Pukall, Strigo, Bushnell

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Table and Figure Captions

Table 1. Regions of increased neuronal activity during the mild stimulation condition.

Table 2. Regions of increased neuronal activity during the strong stimulation condition.

Figure 1. Vulvalgesiometer.

Figure 2. Stimulation paradigm. One scanning session consisted of 4-6 functional scanning runs. Mild stimulation runs (A) consisted of 18 cycles of alternating rest and mild pressures (average 3.8 g) applied to the posterior portion of the vulvar vestibule with a 4.5 mm diameter cotton-swab vulvalgesiometer tip. Strong stimulation runs (B) proceeded in the same manner as mild stimulation runs, but with a higher stimulation level (average 21 g). Each stimulus condition was presented for approximately 12 seconds during which 3 scans of brain activity (based on BOLD signal; see text) were acquired.

Figure 3. Post-run intensity and unpleasantness ratings. Average intensity and unpleasantness ratings (+/- sem) of the control (gray bars) and VVS group (black bars) for the mild (A) and strong (B) stimulation conditions. (A) includes data from 20 runs (10 VVS, 10 control); (B) includes data from 40 runs (20 VVS, 20 controls); despite the groups being matched on equal vulvalgesiometer pressure levels, women with VVS found the latter condition painful (values above 10), while the control group did not.
* indicates that ratings between groups were significantly different at $P = 0.05$.

Figure 4. Activation in response to the mild stimulation condition. Significant changes in BOLD signal (see Methods) were found in lateral S1 and S2 of women with VVS and in the mid-posterior IC in non-affected women in response to mild stimulation of the

posterior portion of the vulvar vestibule via the vulvalgesiometer (see Figure 1 and Methods). Activations are based on 20 scans (10 from each group).

Figure 5. Activation in response to the strong stimulation condition. Significant changes in BOLD signal (see Methods) were found in lateral S1 (A), bilateral S2 (A), and mid-posterior IC (B) in both groups in response to strong vestibular stimulation via the vulvalgesiometer (see Figure 1 and Methods). This condition was perceived as painful by women with VVS, but as non-painful by control women. Activations are based on 40 scans (20 from each group).

Table 1.

Region: Brodmann Area (BA)	Group	Stereotaxic Coordinates X	Y	Z	t-score
Left Mid-Posterior IC	VVS	-34	-2	14	3.8
	Controls	-38	-10	16	**6.1**
	Difference	-36	-10	18	2.8
Right Dorso-Medial Pre-Frontal Cortex (BA6)	VVS	60	4	30	**5.4**
	Controls	50	4	30	3.7
	Difference	58	4	30	2.6
Left Dorso-Medial Pre-Frontal Cortex (BA6)	VVS	-56	4	32	**4.7**
	Controls	-56	8	32	3.2
	Difference	-54	0	24	2.2
Right Cerebellum	VVS	14	-72	-50	**5.2**
	Controls	20	-68	-40	3.2
	Difference	20	-58	-58	3.6[a]
Left S1 (face/lips area)	VVS	-58	-30	48	**4.5**
	Controls	-54	-28	44	3.9
	Difference	-58	-24	52	2.3
Left S2	VVS	-58	-24	20	**4.5**
	Controls	-54	-22	22	3.4
	Difference	-	-	-	-

t-scores of global significance are indicated in bold; [a] indicates significance from the directed search; values that did not reach significance are placed for comparison

Table 2.

REGION: BRODMANN AREA (BA)	*Group*	STEREOTAXIC COORDINATES X	Y	Z	t-score
Right S2	VVS	58	-22	22	**6.7**
	Controls	60	-24	20	3.4
	Difference	62	-18	18	2.8
Left S2	VVS	-56	-22	24	**5.6**
	Controls	-54	-28	24	**4.6**
	Difference	-52	-18	18	3.0[b]
Right Mid-Posterior IC	VVS	40	-6	12	**6.7**
	Controls	38	-2	16	3.4
	Difference	40	-6	10	3.1[a]
Left Mid-Posterior IC	VVS	-40	-4	8	**5.7**
	Controls	-44	-10	12	**5.2**
	Difference	-38	0	8	3.6[a]
Left Basal Ganglia (Putamen)	VVS	-16	8	2	**5.5**
	Controls	-20	4	4	2.0
	Difference	-18	12	0	3.3[b]
Left S1 (face/lips area)	VVS	-60	-26	38	**5.3**
	Controls	-60	-26	46	3.3
	Difference	-54	-32	32	2.8
Right Dorso-Medial Pre-Frontal Cortex (BA6)	VVS	60	4	36	**5.1**
	Controls	62	4	24	3.1
	Difference	56	8	42	3.2[a]
Left Dorso-Medial Pre-Frontal Cortex (BA6)	VVS	-56	4	38	**4.8**
	Controls	-64	4	28	2.6
	Difference	-54	4	38	3.2[a]
Right Area 44	VVS	54	10	12	**4.9**
	Controls	60	8	18	3.6
	Difference	48	6	10	2.9
Left Area 44	VVS	-58	6	22	**4.9**
	Controls	-58	4	14	3.1
	Difference	-58	6	24	2.7
Left Area 40	VVS	-52	-16	16	**4.9**
Left Anterior IC	VVS	-30	14	6	**4.8**
	Controls	-32	16	4	2.5
	Difference	-38	12	8	3.3[a]
Right Anterior IC	VVS	32	20	0	**4.5**
	Controls	32	18	6	2.9
	Difference	32	24	2	2.7
Right Area 6	Controls	62	2	8	**4.6**
Right Area 43/42	VVS	54	-6	10	**4.5**

Left Anterior Cingulate Cortex (BA32)	VVS	-10	24	34	2.8
	Controls	-	-	-	-
	Difference	-10	22	32	3.0

t-scores of global significance are indicated in bold; [a] indicates significance from the directed searches; [b] indicates a strong trend towards significance from the directed searches; values that did not reach significance are placed for comparison

Figure 1.

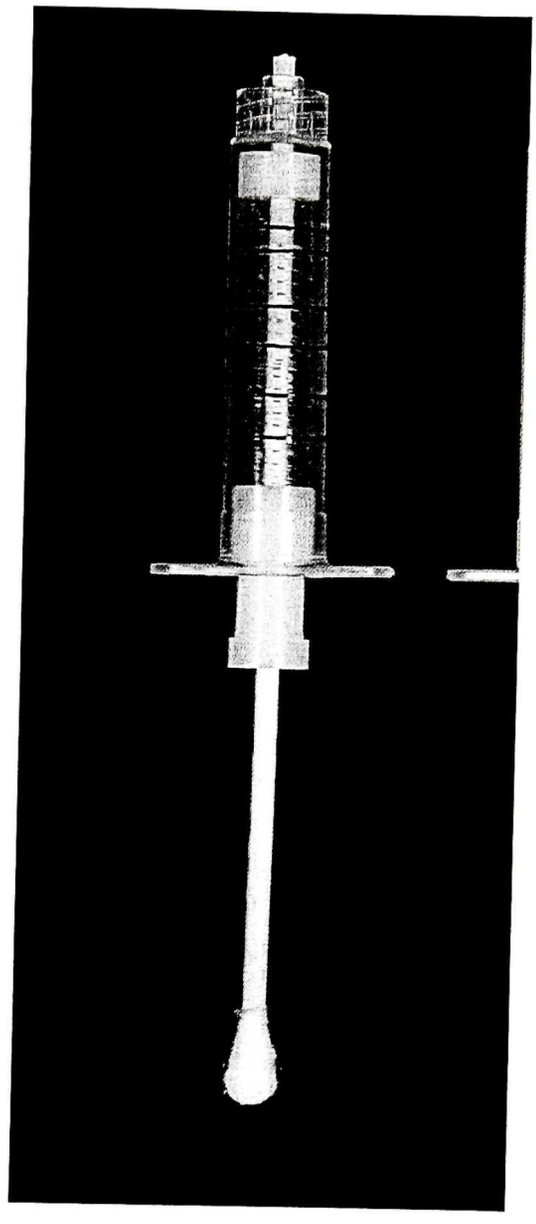


Figure 2.

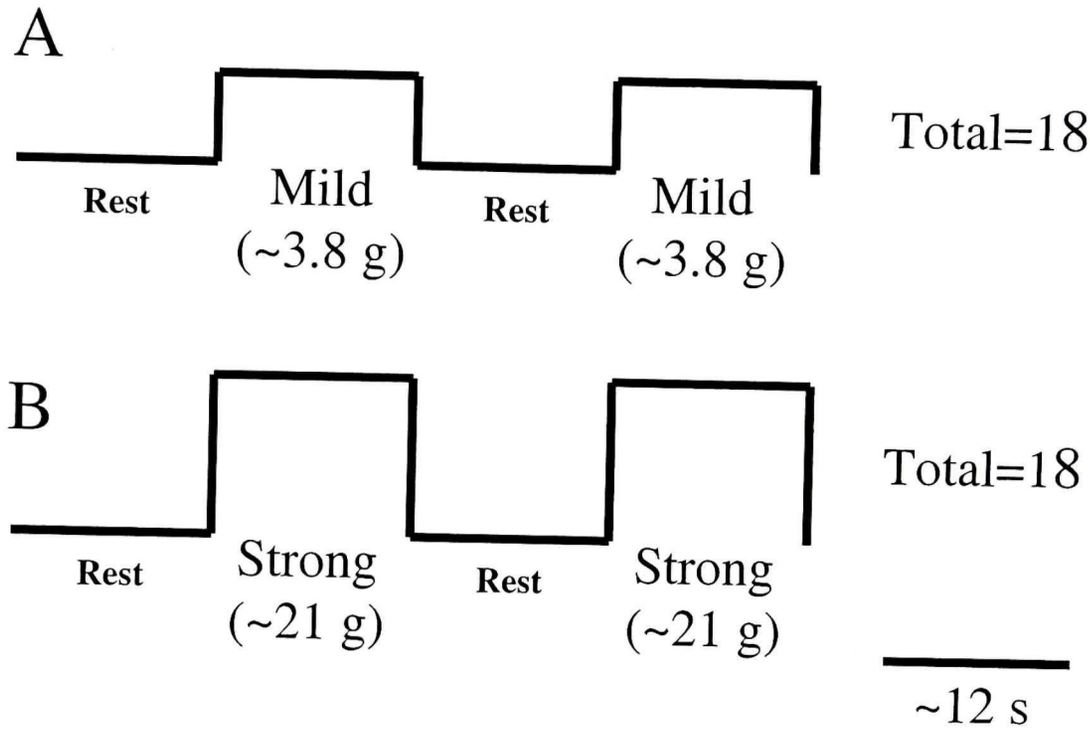
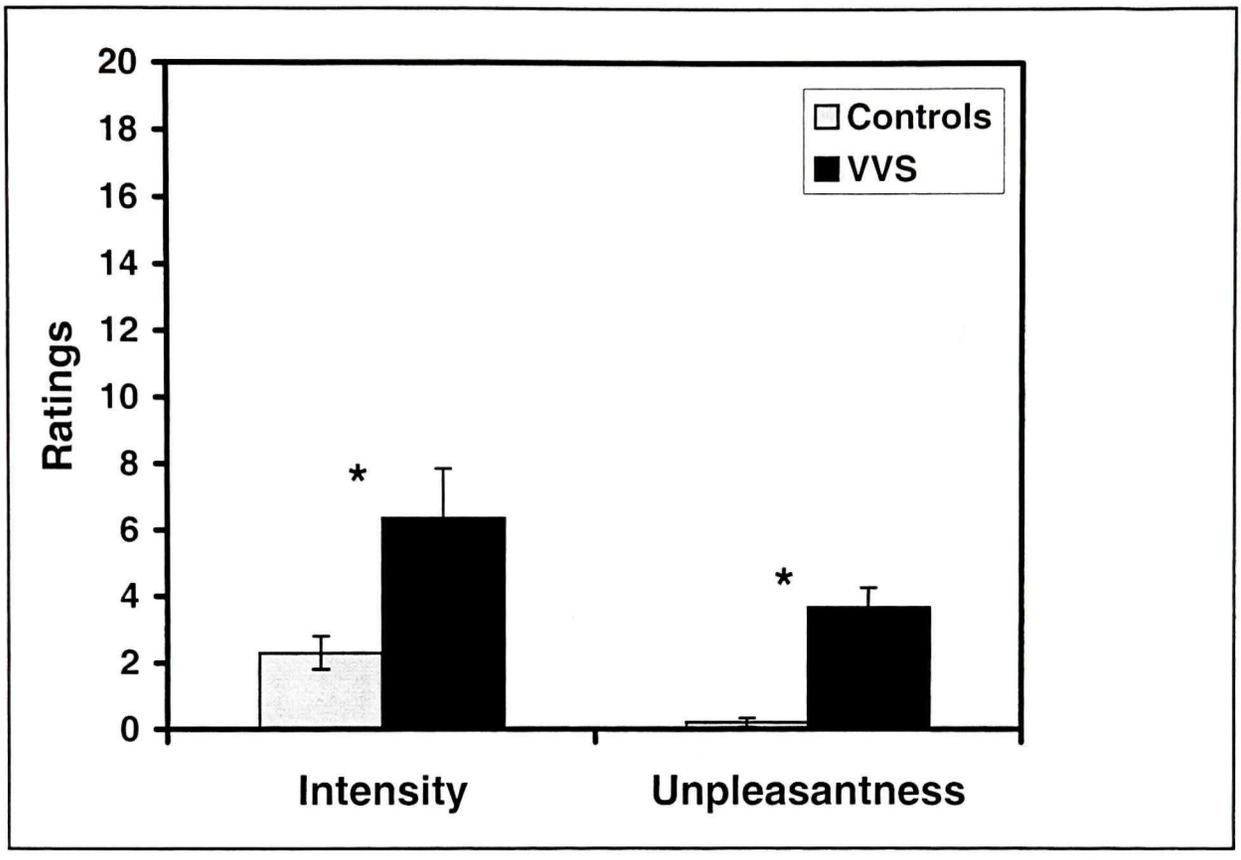

A
Rest
Mild
(~3.8 g)
Rest
Mild
(~3.8 g)
Total=18
B
Rest
Strong
(~21 g)
Rest
Strong
(~21 g)
Total=18
~12 s

Figure 3A.


20
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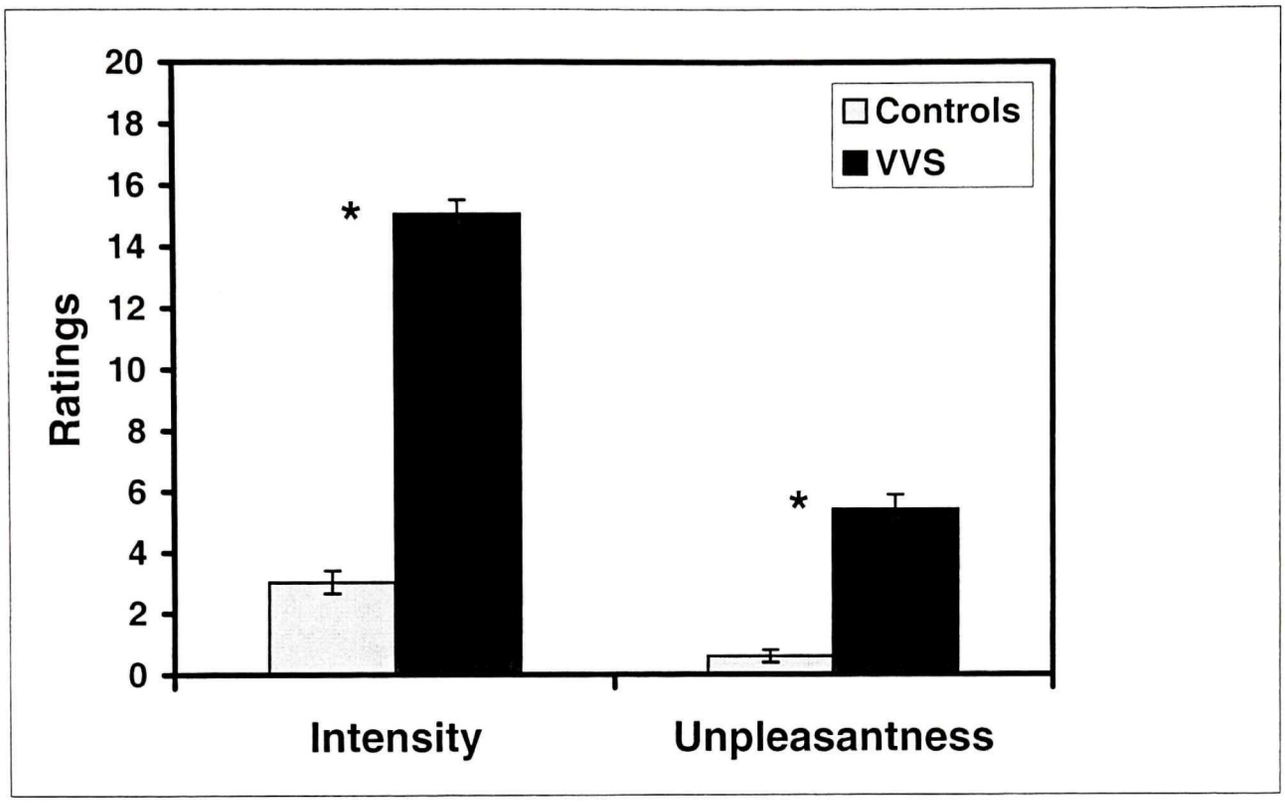
Ratings
Controls
VVS
*
*
Intensity
Unpleasantness

Figure 3B.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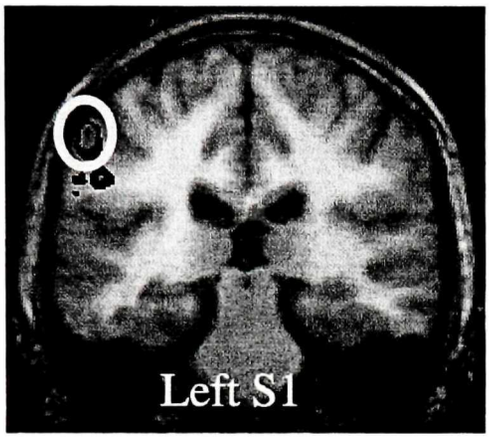
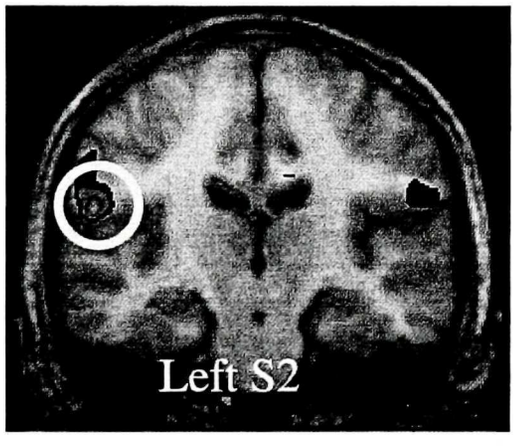
Ratings
Controls
VVS
*
*
Intensity
Unpleasantness

Figure 4.

VVS





Controls

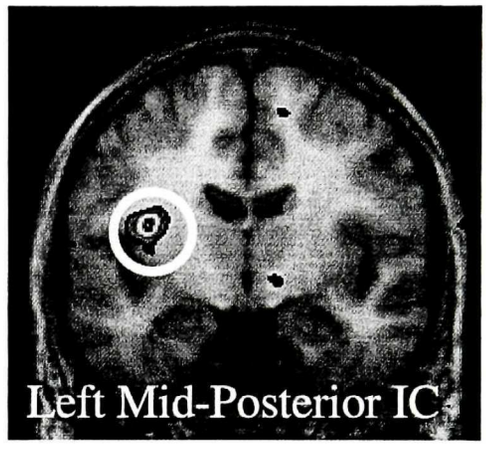


Figure 5A.

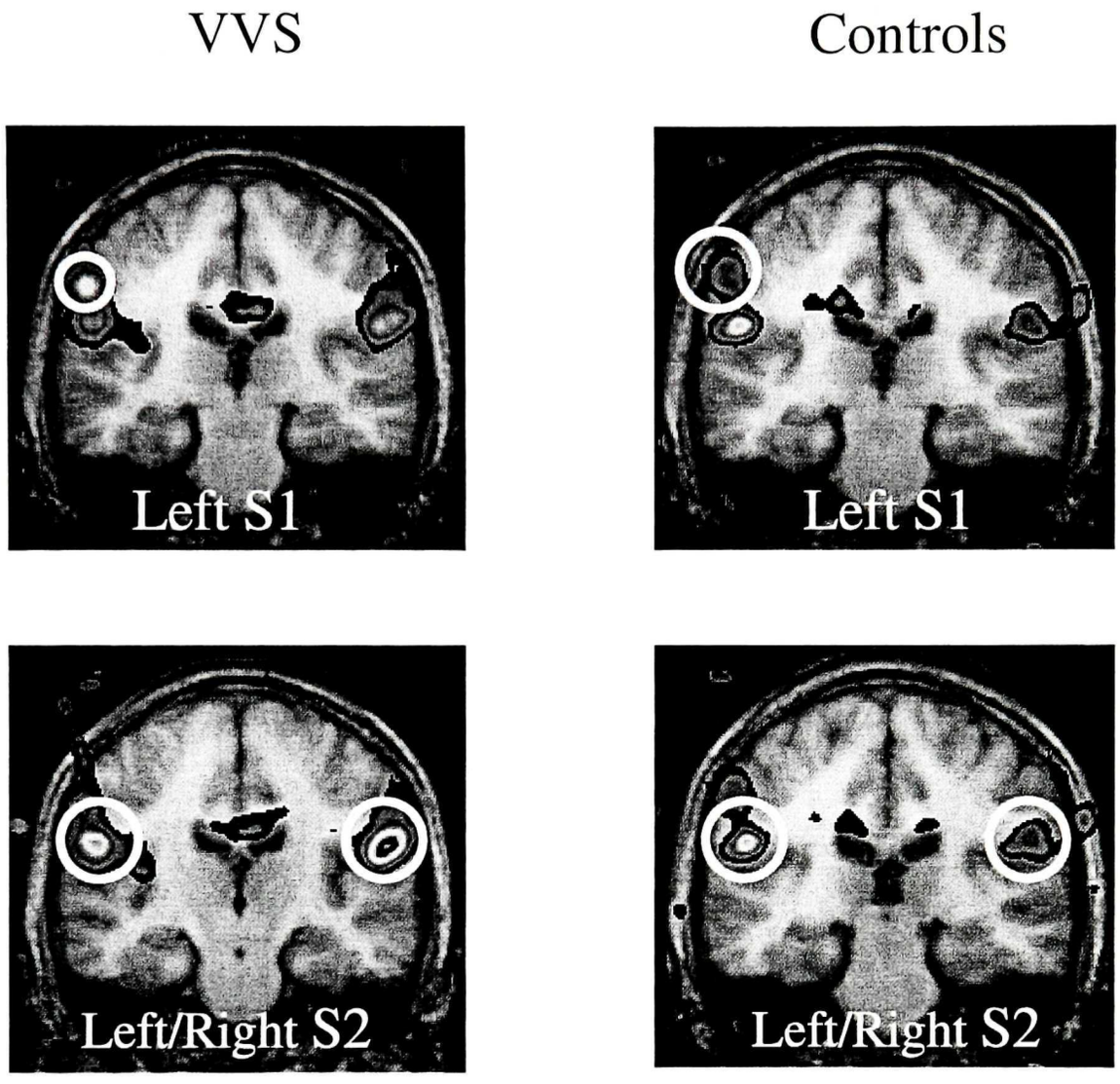
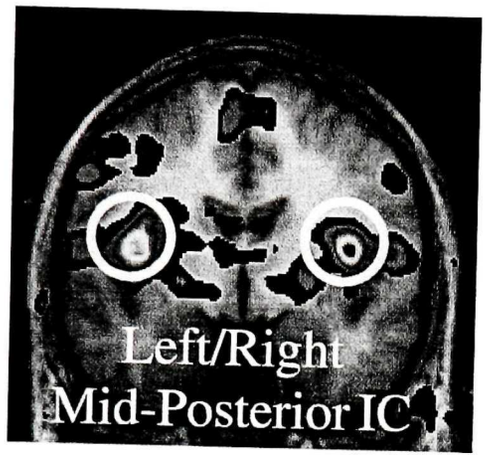


Figure 5B.

VVS



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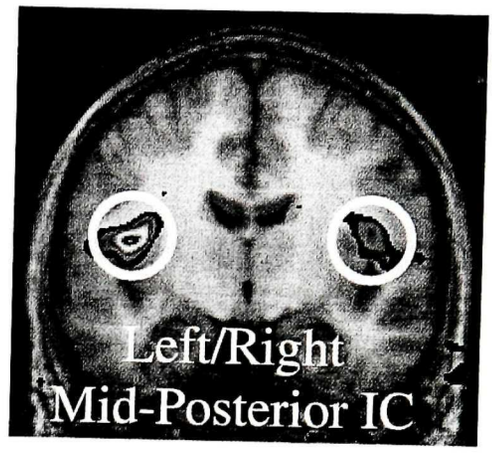

Literature Review Update

Since the publication of the first review paper (chapter 1) on the classification issues of dyspareunia, two papers stating the importance of the pain component in dyspareunia have been added to the literature (Binik, Pukall, Reissing, Khalifé, 2001; Binik, Reissing, Pukall, Flory, Payne, Khalifé, 2002). In addition, there continues to be a proliferation of articles on vulvar vestibulitis, particularly in the pain literature, where it is gaining much recognition. This growing attention has likely contributed to the increased interest by professionals in different specialties. For example, in the epidemiological sphere, Harlow, Wise, and Stewart (2001) estimated that vulvar vestibulitis affects 12% of pre-menopausal women in the general population, with one group of researchers estimating the prevalence of chronic vulvar pain in women aged 12-26 as high as one-third (Berglund, Nigaard, & Rylander, 2002). In addition, a large-scale survey on sexual dysfunction reported rates of 15-21% in women aged 18-39 (Laumann, Paik, & Rosen, 1999). These findings indicate that genital pain in indeed a common women's health problem that warrants further research and clinical attention.

In the pain literature, there have been six additional studies examining the inflammatory hypothesis of vulvar vestibulitis syndrome, first reviewed and explored in Chapter 2. These studies have used specialized pain methodologies and techniques to explore various indices of inflammation in vestibular tissues of women with vulvar vestibulitis and non-affected women. Findings generally support an inflammatory hypothesis of vulvar vestibulitis syndrome, and consist of the following: nociceptor sensitization (Bohm-Starke, Hilliges, Brodda-Jansen, Rylander, & Torebjörk, 2001a),

increased superficial blood flow and erythema in the posterior vestibule (Bohm-Starke, Hilliges, Blomgren, Falconer, & Rylander, 2001b); and deficiencies in the regulation of inflammatory responses (Gerber, Bongiovanni, Ledger, & Witkin, 2002a; Gerber, Bongiovanni, Ledger, & Witkin, 2002b). Genetic techniques also provide support for the inflammatory hypothesis of vulvar vestibulitis (Jeremias, Ledger, & Witkin, 2000). However, not all research supports the involvement of inflammation in vulvar vestibulitis (Bohm-Starke, Falconer, Rylander, & Hilliges, 2001c). Other studies suggest a hormonal component (Harlow et al., 2001; Bouchard, Brisson, Fortier, Morin, & Blanchette, 2002), early vulvar tissue damage (Harlow et al., 2001), and a general disposition to pain (Danielsson, Sjöberg, & Wikman, 2000; Granot, Friedman, Yarnitsky, & Zimmer, 2002). The overall consensus is that the etiology of vulvar vestibulitis is likely to be multi-factorial, but not rooted in a primary sexual disturbance (Danielsson, Eisemann, Sjöberg, & Wikman, 2001).

Despite the overwhelming evidence supporting the importance of the pain component in vulvar vestibulitis, its classification as a sexual dysfunction remains. A recent consensus report detailing the re-conceptualization of the DSM-IV (APA, 1994) sexual dysfunctions did not result in any significant change to the classification of dyspareunia; in fact, to add to the confusion, a new category of non-coital sexual pain disorders was added (Basson, Berman, Burnett, Derogatis, Ferguson, Fourcroy, Goldstein, Graziottin, Heiman, Laan, Leiblum, Padma-Nathan, Rosen, Segraves, Segraves, Shabsigh, Sipski, Wagner, & Whipple, 2000). In addition, although the DSM criteria for subtyping the sexual dysfunctions (e.g., lifelong versus acquired) have been empirically demonstrated to be ineffective in categorizing the different kinds of

dyspareunia (Meana, Binik, Khalifé, & Cohen, 1997), they were retained. This is unfortunate; however, with new emerging data and the continuing attention on dyspareunia, a change in its classification to reflect the importance of the pain component in the near future is promising (reviewed in Chapter 3).

There have been no recent publications regarding the development of novel methods or instruments for genital pain measurement in women with dyspareunia since the description of the vulvalgesiometer (Chapter 4). However, Bohm-Starke et al. (2001a) used existing technologies adapted for the genital region to measure pain and temperature thresholds in women with vulvar vestibulitis syndrome. This publication, in combination with one regarding the establishment of normative values for vaginal and clitoral warmth, cold, and vibration thresholds (Vardi, Gruenwald, Sprecher, Gertman, & Yarnitsky, 2000), provides evidence that the measurement of female genital sensation is becoming more important. There have been no additional brain imaging studies on genital pain (Chapter 5).

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General Conclusions and Directions for Future Research

As this thesis is manuscript-based, the interpretation and implications of each set of results is highlighted in the appropriate section of each individual paper. Thus, this section will focus primarily on directions for future research.

Overall, the papers presented in this thesis support the view that the examination of the pain component of vulvar vestibulitis is important for the advancement of research and treatment. The pain component of vulvar vestibulitis includes not only sensory aspects, but also emotional responses to and cognitive associations with the pain, since pain is conceptualized as a multidimensional experience (Melzack & Casey, 1968; Melzack, 1975; Melzack & Katz, 1994; Merskey & Bogduk, 1994; Gatchel & Turk, 1998). Indeed, the data in this thesis show that women with vulvar vestibulitis syndrome exhibit sensory abnormalities and subjective responses to their pain that parallel those reported in the chronic pain literature (Price & Harkins, 1992; Svensson, Bjerring, Arendt-Nielsen, & Kaaber, 1992; Svensson, Bjerring, Arendt-Nielsen, & Kaaber, 1993). The collection of these data would not have been possible without the reliable measurement tools presented in this thesis; a field of research can only expand once there are reliable and valid measures that allow for a rigorous investigation of the phenomena at hand. While this thesis is a first empirical step in the application of the various methods described, several additional research avenues remain to be explored.

In the first empirical paper, we discovered that women with vulvar vestibulitis syndrome reported significantly more bodily complaints than controls, a finding that had previously been reported in the literature (Danielsson, Sjöberg, & Wikman, 2000). In

addition, we showed that women with vulvar vestibulitis exhibited decreases in both tactile and pain thresholds in non-genital body areas. One possible explanation for this is that women with vulvar vestibulitis have a generalized sensory abnormality, possibly due to a phenomenon termed central sensitization, which leads to altered sensitivity in dorsal horn neurons in the spinal cord and results in pathological pain states (McMahon, 1994; Coderre, Katz, Vaccarino, & Melzack, 1993). This is consistent with the findings that women with vulvar vestibulitis are more prone to other unexplained pain conditions, such as interstitial cystitis and fibromyalgia (Fitzpatrick, DeLancey, Elkins, & McGuire, 1993; Stewart & Berger, 1997), and have enhanced systemic perception and response to painful stimuli (Granot, Friedman, Yarnitsky, & Zimmer, 2002).

One step towards the systematic investigation of generalized sensitivity in women with vulvar vestibulitis is to examine the number of tender points in affected and non-affected women, with the standardized examination for fibromyalgia patients (Okifuji, Turk, Sinclair, Starz, & Marcus, 1997). Several questions will be answered with this investigation: 1) Do women with vulvar vestibulitis syndrome have more tender points than non-affected women, in other words, do they have a generalized sensory abnormality? 2) Do women with the primary form of vulvar vestibulitis (i.e., pain since first intercourse attempt) have more tender points than women with the secondary form (i.e., development of pain after a period of pain-free intercourse)? 3) Do women with vulvar vestibulitis who express more catastrophizing tendencies (Sullivan, Bishop, & Pivik, 1995) or other cognitive distortions (e.g., anxiety) have more tender points than affected women who do not? We are presently conducting this study.

Another fruitful line of research exists with respect to treatment outcome, which is possible only with the development of reliable assessment and rating tools presented in this thesis. It is now possible to track both physical sensitivity and psychological responses to the pain, pre- and post-treatment. We have provided several research groups who are in the process of conducting treatment outcome studies in women with vulvar vestibulitis syndrome with our rating scales and measurement tools in order to answer the following questions: 1) Are changes in intercourse pain from pre- to post-treatment related to changes in physical sensitivity, psychological responses to the pain, or both? 2) Do these effects change over time, for example, from 6 months to 2.5-years post-treatment? 3) Do different treatments have distinct effects on the physical versus affective components of the pain experience? For example, does vestibulectomy (i.e., surgical removal of the vestibule) affect primarily the sensory component of the pain, and does cognitive-behavior therapy target mainly the emotional component by reducing feelings of unpleasantness associated with the pain?

Another direct extension of the research presented in this thesis is the further exploration of brain activation patterns in women with vulvar vestibulitis via functional magnetic resonance imaging. Several scenarios are possible with this imaging technique: 1) Does partner presence enhance the pain signal (Flor, Lutzenberger, Knost, Diesch, & Birbaumer, 2002), and does this depend on partner solicitousness, as has been found in the chronic pain literature (Flor, Kerns, & Turk, 1987; Flor, Turk, & Rudy, 1989; Lousberg, Schmidt, & Groenman, 1992)? 2) Do affected women with high catastrophizing tendencies (Sullivan et al., 1995) differ in their brain activation patterns as compared with affected women low in these tendencies?

The research in this thesis provides unique information about the sensory and affective components of pain in women with vulvar vestibulitis syndrome. As pain is defined as having many components, including cognitive, relational, sensory, (Melzack & Casey, 1968; Melzack, 1975; Melzack & Katz, 1994; Merskey & Bogduk, 1994; Gatchel & Turk, 1998), many different avenues remain to be explored. In particular, the cognitive aspect of pain, such as pain-related hypervigilance, has been found to play an important role in pain perception in the chronic pain literature (Pearce & Morley, 1989; Asmundson, Kuperos, & Norton, 1997; Crombez, Hermans, & Adriaensen, 2000; Beck, Freeman, Shiperd, Hamblen, & Lackner, 2001). This aspect has just begun to be studied in women with vulvar vestibulitis syndrome (Granot et al., 2002) and is currently being expanded in our laboratory through the examination of fear of pain, anxiety, and hypervigilance (Payne, Binik, Amsel, Khalifé, & Lahaie, 2002). This research will add to our understanding of the cognitive distortions present in women with vulvar vestibulitis and will allow us to offer better treatment options to them.

All of these research questions have important implications for both research and treatment. With the continuing gathering of support for the importance of the pain component in vulvar vestibulitis syndrome, it is possible that the ultimate goal of establishing vulvar vestibulitis syndrome as a pain disorder will be reached. This will allow for more rigorous investigations of the multitude of factors that play a role in the pain experience, and will lead to the development of multi-disciplinary treatments for women who suffer from other types of urogenital pain problems.

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APPENDICES

Appendix 1 –

Advertisements

PAIN DURING SEXUAL INTERCOURSE

Research Study

McGill University & the Montreal Neurological Institute seek women aged 18 to 45 who experience pain during sexual intercourse to participate in a brain imaging study designed to examine how the brain mediates genital pain.

This research project is directed by Dr. I. Binik, McGill University, Department of Psychology, Sex and Couple Therapy Service, Royal Victoria Hospital and Dr. M.C. Bushnell, McGill University, Department of Anesthesia. Participation includes one gynecological examination, a 20-minute interview, a 30-minute sensory testing session, and a 90-minute brain scanning session. Some pain may be experienced during the procedure, but no other health risks are posed. Participants will be reimbursed for their expenses.

McGill University & the Montreal Neurological Institute

For more information, call Talia Hoffstein at 398-5323.

BRAIN IMAGING STUDY ON GENITAL SENSATIONS

McGill University & the Montreal Neurological Institute seek women aged 18 to 40 who do not experience pain during sexual intercourse to participate in a brain imaging study designed to examine how the brain responds to genital sensation.

This research project is directed by Dr. I. Binik, Department of Psychology, McGill University and Sex and Couple Therapy Service, Royal Victoria Hospital, and Dr. M.C. Bushnell, Department of Anesthesia, McGill University. Participation includes one gynecological examination, a 30-minute interview, a 30-minute sensory testing session, and a 90-minute brain scanning session. Some pain may be experienced during the procedure, but no other health risks are posed. Participants will be reimbursed

McGill University & the Montreal Neurological Institute

For more information, call Talia Hoffstein at 398-5323.

LA DOULEUR LORS DES RELATIONS SEXUELLES

Une Étude De Recherche

L'Université de McGill & l'Institut Neurologique de Montréal recherchent des femmes agées entre 18 et 45 ans qui ressentent de la douleur lors des relations sexuelles pour participer à une étude sur l'imagerie cérébrale. Cette étude fut réalisée dans le but d'examiner comment le cerveau intervient lors de douleurs génitales.

Cette recherche est dirigée par le Dr. Irv Binik de l'Université de McGill, Département de Psychologie, Service de Thérapie Sexuelle et de Thérapie de Couple, Hôpital Royal Victoria et par le Dr. M. C. Bushnell de l'Université de McGill, Département d'Anesthésie. La participation à cette étude comprend un examen gynécologique, une entrevue de 20 minutes, une session d'examens sensoriels de 30 minutes, et une session d'imagerie fonctionnelle cérébrale de 90 minutes. Il est possible de ressentir de la douleur lors de la procédure mais il n'y a aucun autre risque de santé. Les participantes seront remboursées pour leurs dépenses.

L'Université de McGill & l'Institut Neurologique de Montréal
Pour plus de renseignements, appelez Talia Hoffstein au 398-5323.

Appendix 2 –

Consent Forms

Subject Consent Form #1

An Investigation of Tactile Detection and Pain Thresholds in Women with Vulvar Vestibulitis Syndrome

Principal Investigators
Dr. Irv Binik, Dr. Samir Khalifé, Dr. Frances Abbott,
Ms. Caroline Pukall, and Ms. Janet Bradley

Introduction

This study is being carried out by a multidisciplinary group of psychologists and gynecologists. The principal psychologist is Dr. Irv Binik, Dept. of Psychology, McGill University (398-6094) & Director, Sex and Couple Therapy Service, Royal Victoria Hospital. The principal gynecologist is Dr. Samir Khalifé (933-8877), Dept. of Obstetrics and Gynecology, Jewish General Hospital. The study is supported by a research grant from Medical Research Council of Canada.

Purpose of the Study

The purpose of this study is to better understand the nature and extent of the pain experienced by women suffering from Vulvar Vestibulitis Syndrome (VVS).This syndrome is a poorly understood pain disorder limited to the vulvar area whose main symptom is pain during intercourse.

Procedures of the Study

Participation in the study will involve the following procedures: 1) an interview 2) a gynecological exam; 3) Three sessions of sensory tests of touch and pain in 4 different vulvar areas.

Interview & Questionnaires

The structured interview and completion of questionnaires will take a maximum of 60 minutes and will cover medical history, pain during intercourse and other situations, and current physical and psychological symptoms.

Gynecological Examination

During the gynecological examination (10-15 minutes), the doctor will visually and manually examine the woman's internal and external genitalia and reproductive organs. The participant will be in total control of the procedure and may ask to stop at any time or may control the speed of the examination. A female chaperone (e.g., research assistant) will be present during the examination.

Sensory Tests

A series of tests of the sensation and perception of vulvar/vaginal touch and pain will be carried out. These tests will be carried out by a trained female assistant who will touch the areas of the vulva/vagina with standard equipment (nylon threads) and ask the participant to rate their sensation on a scale. A female chaperone (e.g., research assistant)

will be present during the sensory testing. This testing will be carried out in a single session that will be scheduled at the convenience of the participant. Each of the testing procedures will be demonstrated on the participant's arm before testing begins on the vulva. The tests will include the following:

1. Measurement of Pain-Pressure Thresholds This procedure (10-15 minutes) determines the maximum tolerated pressure in the deltoid muscle and tibia. This procedure will be performed with a pressure tolerance meter in order to assess pain-pressure sensitivity of these areas.

2. Measurement of Tactile Detection Thresholds This test (30-40 minutes) determines the least pressure at which one can feel touch. A series of nylon threads will be applied to the participant's control sites (i.e., inner thigh, labia majora, labia minora) and vulva/vagina in order to determine the smallest pressure that one can detect. The participant will be asked rate the sensation on a scale.

3. Measurement of Pain Thresholds This procedure (15-20 minutes) involves the application of a suprathreshold nylon thread to the participant's control sites and vulva/vagina. The participant will be asked rate the sensation on a scale. The participant will be in total control of the procedure and may ask to stop at any time or may control the speed of the examination.

Risks and Benefits

The major risk involved is that some of the above procedures may be uncomfortable or painful. The major benefit will be our increased understanding of the pain which will allow for better treatments.

Compensation

The participant's expenses (e.g., transport, parking, loss of work, baby sitters) will be reimbursed up to a maximum of $75.

Participant Rights

The participant is under no obligation to participate in this study and acceptance or refusal will not affect access to services. Furthermore, the participant is free to withdraw from the study at any time or to refuse to answer any questions posed without need of any explanation on her part.

Contacts

In the event that the participant has any complaints or dissatisfactions with this research, they can be communicated to one of the principal investigators. Questions regarding the rights as a research subject should be directed to the Patient Representative either at the Jewish General Hospital (Roslyn Davidson 340-8222, loc. 5833) or at the Royal Victoria Hospital (Pat O'Rourke 842-1231, loc. 5655).

Confidentiality

Two different records of the participant's interviews and examinations will be kept. Official office/clinic records will include the participant's name and the results of the gynecological examination, and will be kept as are all office/clinic records. The results of the interviews, questionnaires, and sensory testing will not be kept in hospital records and will be available only to members of the research team. These records will be identified only by a research number and will not have the participant's name on them.

Participant's Signature

The study has been explained to me and my questions have been answered to my satisfaction. I agree to participate in this study. I will keep one copy of this form.

Signature _____

Name (print) _____

Date _____

Investigator _____

Witness _____

Formulaire de Consentement du Sujet #1

Une Recherche pour Évaluer la Sensibilité et le Seuil de Douleur chez les Femmes Souffrant du Syndrome de la Vestibulite Vulvaire

Principaux chercheurs
Dr. Irv Binik, Dr. Samir Khalifé, Dr. Frances Abbott, Madame Caroline Pukall, et Madame Janet Bradley

Introduction
Cette étude est effectuée par une équipe multidisciplinaire de psychologues et de gynécologues. Le psychologue responsable est le Dr. Irv Binik du département de psychologie de l'Université McGill (398-6094) et directeur du service de thérapie sexuelle de couples de l'hôpital Royal Victoria. Le gynécologue responsable est le Dr. Samir Khalifé (933-8877) du département d'obstétrique et de gynécologie de l'hôpital générale Juif. Cette étude est rendue possible grâce à une bourse du conseil médical de recherche du Canada.

But de l'étude
Le but de cette étude est de mieux comprendre la nature et l'importance de la douleur ressentie par les femmes souffrant du syndrome de la vestibulite vulvaire. Ce syndrome très mal compris se situe autour de la vestibule seulement et se traduit par une douleur pendant les relations sexuelles.

Déroulement de l'étude
La participation à l'étude se déroule comme suit: 1) une entrevue; 2) un examen gynécologique; 3) trois sessions pour déterminer le première sensation tactile et le seuil de douleur dans quatre régions vulvaires.

Entrevue & Questionnaires
L'entrevue dirigée et les questionnaires prendront environ soixante minutes; ils comprendront le passé médical, la douleur pendant la pénétration ou en toutes autres occasions, et les symptomes physiques et psychologiques.

Examen Gynécologique
Pendant l'examen gynécologique (10-15 minutes), le médecin regardera et touchera aux parties génitales et reproductrices internes et externes de la femme. La participante sera mise au courant durant tout le processus et pourra interrompre ou contrôler la vitesse de l'examen. Une assistante de recherche sera présente pendant l'examen.

Tests Sensoriels
Plusieurs tests sensoriels seront exécutés sur la vulve et le vagin. Ces tests seront effectués par une assistante formée qui touchera à la vulve à l'aide d'équipement standard (fil de nylon) et demandera à la participante de mesurer la sensation d'après une échelle. Une assistante sera présente durant le test sensoriel. Ce test sera exécuté en une session et

un rendez-vous sera fixé selon les disponibilités de la participante. Un test sera effectué sur le bras de la participante pour ensuite être executé sur la vulve. Les tests se dérouleront comme suit:

1. Vérification du seuil de douleur à la pression Ce processus (10-15 minutes) mesure la pression maximale toléré par le "deltoid" et le "tibia". Ceci est effectué à l'aide d'un appareil approprié déterminant la sensibilité à la douleur dans ces régions.

2. Vérification du seuil sensoriel Ce test (30-40 minutes) mesure la moindre pression ressentie par la patiente. Une quantité de fils de nylon seront placés aux régions suivantes: à la cuisse interne, à la grande lévre, à la petite lévre, et à la vulve/au vagin de façon à déterminer quel est la pression minimale ressentie. La participante mesurera la sensibilité d'après une échelle.

3. Vérification du seuil de douleur Ce processus (15-20 minutes) comprend l'application de fils de nylon résistants aux régions nommées ci-dessus; la participante mesurera l'intensité de douleur selon une échelle. Elle contrôlera l'examen et pourra l'arrêter à volonté.

Risques et Bienfaits
Le plus grand risque sera l'inconfort ou la douleur pendant les examens. Le plus grand bienfait sera une compréhension plus grande de la douleur afin de promulguer de meilleurs traitements.

Compensation
Les dépenses de la participante (transport, stationnement, gardienne) seront défrayées jusqu'à concurrence de $75.00.

Les Droits de la Participante
Les femmes ne sont pas tenues d'accepter de faire partie de cette étude pour avoir accès aux services. De plus, si la participante veut se retirer de l'étude ou refuser de répondre à certaines questions, elle le peut.

Personnes à Contacter
Si la participante a des plaintes ou des questions au sujet de cette recherche, elle pourra le faire auprès des responsables. Les questions se rapportant à ses droits comme participante iront à la représentante des patients à l'hôpital général Juif (Roslyn Davidson 340-8222, poste 5833) ou à l'hôpital Royal Victoria (Pat O'Rourke 842-1231, poste 5655).

Confidentialité
Deux dossiers différents des entrevues et des examens seront gardés. Les dossiers officiels de la clinique comprenant le nom et les résultats gynécologiques de la patiente seront gardés dans les dossiers de la clinique. Le résultats des entrevues, des questionnaires, et des tests sensoriels ne seront pas revisés dans les dossiers de l'hôpital

mais seront gardés disponibles seulement aux membres de l'équipe de recherche. Un numéro au lieu d'un nom identifiera ce dossier.

Signature de la participante
Cette étude m'a été expliquée et on a répondu à toutes mes questions. J'accepte d'y participer. Je garderais une copie de ce formulaire.

Signature _____

Nom (lettres moulées) _____

Date _____

Chercheur _____

Témoin _____

MAGNETIC RESONANCE IMAGING (MRI) CONSENT FORM
MONTREAL NEUROLOGICAL INSTITUTE AND HOSPITAL
McConnell Brain Imaging Center

Title of Project: Neural Correlates of Pain in Women with Vulvar Vestibulitis Syndrome as Evaluated by fMRI

Investigators: Y.M. Binik, M.C. Bushnell, C.F. Pukall, I. Strigo, S. Khalifé

REASON FOR THE STUDY:
Functional brain imaging allows for the identification of specific regions of the brain that are activated in response to touch and pain. The purpose of this study is to use this tool to try to understand how genital touch and pain sensation are handled by the brain.

PROCEDURES:
Your participation in this study will involve the following: 1) an interview and questionnaires; 2) a gynecological exam; 3) one sensory testing session; and 4) one brain scanning session.

Interview and Questionnaires: The semi-structured interview and completion of questionnaires will take a maximum of 20 minutes and will cover medical history, pain during intercourse and other situations, and current physical and psychological symptoms.

Gynecological Examination: During the gynecological examination (10-15 minutes), the doctor will visually and manually examine your internal and external genitalia and reproductive organs. You will be in total control of the procedure and may ask to stop at any time and/or control the speed of the examination. A female chaperone (e.g., research assistant) will be present during the examination.

Sensory testing session: During the sensory testing session (1 to 1½ hour), you will be presented with tactile and pain stimuli on the skin around the entrance to your vagina. These tests will be carried out by a trained female research assistant who will touch your vulvar/vaginal areas with nylon threads of different thicknesses. You will be presented with a range of weak and strong intensities and you will be asked to rate them on a scale that will be explained to you prior to testing. Although some of the stimuli may seem uncomfortable or painful to you, none will damage your skin. Also, you can withdraw from and terminate any stimulus that is too uncomfortable at any time.

Brain scanning session: During the brain scanning session (approximately 90 minutes), you will undergo magnetic resonance imaging (MRI), a non-invasive test that uses a magnetic field and radio frequency waves to visualize certain types of tissue. This scanning allows for the examination of internal organs, such as the brain, and measures

such things as how rapidly blood is flowing to the brain and how much oxygen is being used by different parts of the brain.

You will be asked to undress from the waist down, cover yourself from the waist down with a sheet, and lie on a couch that will be moved into a cylindrical opening where pictures of your head will be taken during a period of approximately 90 minutes. The MRI machine will be quite noisy during the scan. To reduce the noise, you will be given earplugs. You will be able to communicate with the technician during the procedure.During this part of the procedure, you will be presented with varying levels of touch and pain stimuli on the vulvar/vaginal skin. The stimuli will be chosen from those that were previously applied to you during the sensory testing session, and they will be presented in the same way as you previously experienced. We will inform you as to which stimuli have been chosen, and we will ask you if they are acceptable prior to scanning. As in the sensory testing session, the stimuli will not damage the skin, and you can withdraw from any stimulus you find to be too uncomfortable. Following each stimulus, you will be asked to evaluate the intensity and unpleasantness of the stimulation on a scale of 0-5, by holding up the appropriate number of fingers.

CONTRAINDICATIONS:

The following are contraindications for this study:

1) Pacemaker
2) Aneurysm Clip
3) Heart/Vascular Clip
4) Prosthetic Valve
5) Metal Prosthesis
6) Pregnancy or currently breast-feeding
7) Severe claustrophobia
8) Possibility of metal fragments in eye or any other part of the body
9) Cardiovascular or neurological disease (other than your pain problem)
10) Under 18 years old
11) Current use of analgesics
12) Chronic pain other than VVS

ADVANTAGES OF THE PROPOSED STUDY:

The information obtained from this study will potentially help our understanding of how the brain processes genital pain in women with Vulvar Vestibulitis Syndrome. This may, in turn, improve the treatment of women with genital pain.

DISADVANTAGES OF THE PROPOSED STUDY:

The major disadvantage involved is that some of the above procedures may be uncomfortable or painful. The stimuli may cause some pain and/or discomfort and/or temporary reddening of the skin, but they will not damage the skin. During this study, you will be exposed to a strong magnetic field. No long-term negative side-effects have been observed from this type of study. As mentioned above, the MR is very noisy and you will be given earplugs to reduce this effect. Some individuals may experience

claustrophobia (fear and/or discomfort when in a small space) upon entering the machine. However, if you press a hand-held switch, you will be taken out of the machine immediately. Metallic objects can be attracted with great force by the magnetic field, thus, you will be asked to removed all such objects from your person and clothing prior to scanning.

EFFECTS OF PARTICIPATION IN THIS STUDY ON YOUR TREATMENT:
Magnetic resonance imaging does not interfere with any treatment or other diagnostic tests.

CONFIDENTIAL NATURE OF THIS STUDY:
Participation in this study is strictly confidential. The McGill Faculty of Medicine Institutional Review Board may review the research files. The investigators will take all reasonable measures to protect the confidentiality of your records. Two different records of the participants' gynecological examination results will be kept. Official office/clinic records will include will include your name and results of the gynecological examination, and will be kept as are all office/clinic records. The results of the interview and questionnaires will not be kept in hospital records and will be available only to members of the research team. These records will be identified only by a research number and will not have your name on them. The results of the MR testing will be kept confidential, since your name will be encoded at the time of scanning. No personal information will be released to third parties without your written approval. Your identity will not be revealed in any presentation or publication that results from this project.

INCIDENTAL FINDINGS:
Research scans are not subject to clinical review. However, any incidental findings will be communicated to you and, upon your request, to your physician.

DISCONTINUATION OF THE STUDY BY THE INVESTIGATOR:
At any time during the testing, the investigators have the right to terminate the study for purely scientific reasons.

COMPENSATION:
Upon completion of the testing and MRI studies, you will receive $150 as compensation for your time and inconvenience. If studies have to be terminated for scientific reasons, compensation will be adjusted according to the fraction of the studies completed.

SUBJECT'S STATEMENT CONCERNING WITHDRAWAL FROM THE STUDY:
I understand that my participation in this research project is voluntary and I may withdraw at any time, including during the procedure, without prejudice to myself or my treatment.

CONTACTS:
In the event that you have any questions, complaints, or dissatisfactions with this research, you can communicate with one of the principal investigators (398-5323).

Questions regarding the rights as a research subject should be directed to the Patient Representative at either the Montreal Neurological Institute (Andrew Steinmetz, 398-5358) or the Royal Victoria Hospital (Pat O'Rourke, 842-1231, loc. 5655).

QUESTIONNAIRE AND DECLARATION OF CONSENT

Previous surgery (type and date): _____

Does the subject have any of the following?

	YES	NO
Cardiac pacemaker	☐	☐
Surgical clip on an aneurysm or other vessel	☐	☐
Surgical clip or valve on the heart	☐	☐
Prostheses (specify type and location)	☐	☐
Implants (specify type and location)	☐	☐
Metal or metallic fragments in any other part of the body (specify)	☐	☐
Is the subject pregnant or breast-feeding?	☐	☐
Is the subject currently taking any prescription medication? (specify): _____	☐	☐

SUBJECT'S DECLARATION OF CONSENT

Neural Correlates of Pain in Women with Vulvar Vestibulitis Syndrome as Evaluated by fMRI
Montreal Neurological Institute and Hospital

I, _____, have read the above description with one of the

above investigators, _____.

I fully understand the procedures, advantages and disadvantages of the study which has been explained to me. I freely and voluntarily consent to participate in this study. Further, I understand that I am free to withdraw from the testing at any time if I desire, and that my personal information will be kept confidential.

Subject

Name	Signature	Date	Contact No.

Investigator

Name	Signature	Date	Contact No.

Witness

Name	Signature	Date	Contact No.

Imagerie Par Résonance Magnétique (IRM) Formulaire De Consentement
Institut Et Hôpital Neurologique De Montréal
Centre D'imagerie Cérébrale McConnell

Titre du Projet: Représentations Neurales de la Douleur Évaluées par le IRMf chez les Femmes Atteintes de la Vestibulite Vulvaire

Chercheurs: Y.M. Binik, M.C. Bushnell, F.V. Abbott, C.F. Pukall, I. Strigo, S. Khalifé

MOTIVATION DE L'ÉTUDE:
L'imagerie cérébrale fonctionnelle permet d'identifier les régions spécifiques du cerveau activées lors du toucher et de la douleur. Le but de cette étude est d'utiliser cet outil pour essayer de comprendre comment le toucher génital et la sensation de douleur sont maniés par le cerveau.

MÉTHODOLOGIE:
Votre participation à cette étude se compose de: 1) une entrevue et des questionnaires à remplir ; 2) un examen gynécologique ; 3) une session de test sensoriel ; et 4) une session à l'aide d'un scanner cérébral.

Entrevue et Questionnaires: L'entrevue semi-structurée et les questionnaires à remplir prendront un maximum de 20 minutes et couvriront votre histoire médical, votre douleur lors des relations sexuelles et autres ainsi que vos symptômes physiques et psychologiques.

Examen Gynécologique: Lors de l'examen gynécologique (10-15 minutes), le médecin examinera visuellement et manuellement vos organes génitaux internes et externes ainsi que vos organes reproductifs. Vous aurez un contrôle absolu de la procédure et pourrez demander au médecin d'arrêter à tout moment et/ou de contrôler la vitesse de l'examen. Une chaperonne (ex., assistante de recherche) sera présente lors de l'examen.

Session de test sensoriel: Durant la session de test sensoriel (1 à 1½ heure), nous vous présenterons des stimuli tactiles et douloureux sur la peau à l'entoure de l'entrée du vagin. Ces examens seront effectués par une assistante de recherche qualifiée qui vous touchera les régions vaginales et vulvaires à l'aide de fil de Nylon de différentes épaisseurs. Nous vous présenterons une gamme de faibles et fortes intensités et vous serez demandées de les évaluer sur une échelle qui vous sera décrite avant l'examen. Bien que certains stimuli peuvent être inconfortables ou douloureux pour vous, aucun n'engendreront des dommages à la peau. De plus, vous pouvez en tout temps vous désister de l'examen et terminer tout stimuli qui vous est trop inconfortable.

Session à l'aide d'un scanner cérébrale: Durant la session comprenant un scanner cérébral (environ 90 minutes), vous serez soumise à un examen d'imagerie par résonance magnétique (IRM), soit un examen non-invasif qui permet de visualiser certains types de tissus en utilisant un champ magnétique et des ondes-radio. Ce scanner cérébral permet

d'examiner les organes internes comme le cerveau et de mesurer la vitesses à laquelle le sang coule vers le cerveau et combien d'oxygène est utilisé par différentes régions. Vous serez demandée de vous déshabiller de la taille au pied, de vous couvrir à l'aide d'un drap et de vous étendre sur un divan qui sera déplacé à l'intérieur d'une machine cylindrique où des photos de votre tête seront prises pour une période d'environ 90 minutes. Le scanner IRM est une machine bruyante par moments. Pour diminuer l'intensité du bruit, vous recevrez des protections pour vos oreilles. Durant la procédure, vous serez en communication constante avec l'opérateur du scanner.

Durant cette procédure, nous appliquerons une variété de différents stimuli tactiles et douloureux sur votre peau vaginale/vulvaire. Les stimuli seront choisis à partir de ceux appliqués lors de la session de test sensoriel et ils seront présentés dans le même ordre qu'auparavant. Nous vous informerons des stimuli choisis pour l'examen et vous demanderons avant de débuter s'ils sont acceptables. Comme lors de l'examen sensoriel, les stimuli ne causeront aucun dommage à votre peau et vous pourrez cesser l'application de tous stimuli que vous trouverez trop inconfortable. À la suite de chaque stimuli, vous serez demandée d'évaluer l'intensité et le caractère désagréable de la stimulation sur une échelle de 0-5. Vous effectuerez cette tâche à l'aide de vos doigts en levant le nombre de doigts correspondant au chiffre choisi.

CONTRE-INDICATIONS:

Les informations ci-dessous sont des contre-indications pour cette étude :

1) Stimulateur cardiaque (pacemaker)
2) "Clip" d'anévrisme
3) "Clip" cardio-vasculaire
4) Valve cardiaque artificielle
5) Prothèse métallique
6) Grossesse ou allaitement
7) Claustrophobie sévère
8) Possibilité de fragments métalliques dans les yeux ou toutes autres parties du corps
9) Désordre cardio-vasculaire ou neurologique
10) 18 ans et moins
11) Usage actuel d'analgésiques
12) Douleur chronique autre que le VVS

AVANTAGES DE L'ÉTUDE PROPOSÉE:

L'information obtenue par cette étude approfondira notre compréhension des manières dont le cerveau traite la douleur génitale chez les femmes avec la syndrome de la vestibulits vulvaire. Ceci pourra, par conséquent, améliorer les traitements pour les femmes souffrant de douleur génitale.

DÉSAVANTAGES DE L'ÉTUDE PROPOSÉE:

Le désavantage majeur de l'étude est que certaines procédures peuvent être inconfortables ou douloureuses. Les stimuli peuvent causer de la douleur et/ou du malaise et /ou une rougeur temporaire de la peau sans toutefois causer un dommage à la peau.

Durant cette étude, vous serez exposée à un puissant champ magnétique. Cependant, jamais aucun effets néfastes fut observés à la suite d'examens de ce type. Comme mentionné auparavant, le scanner est une machine très bruyante et vous recevrez des protections pour vos oreilles dans le but de diminuer l'intensité du bruit. Certains individus peuvent ressentir de la claustrophobie (peur et/ou malaise lorsque vous êtes dans un petit espace) lors de l'introduction à l'intérieur de la machine. Toutefois, si vous pesez sur un interrupteur manuel, vous serez immédiatement sortie de la machine. Les objets métalliques peuvent être attirés avec une grande force par le champ magnétique du scanner. Vous devrez donc retirer tout objet sur votre personne et vos vêtements avant l'examen (montre, bijoux, ceinture).

EFFETS RELIÉS À LA PARTICIPATION À CETTE ÉTUDE:
L'imagerie par résonance magnétique n'interfère en aucune sorte avec quelconque traitement ou examen diagnostique.

NATURE CONFIDENTIELLE DE CETTE ÉTUDE:
Votre participation dans cette étude est strictement confidentielle. Le Comité Institutionnel de Révision de la Faculté de Médecine à McGill révisera peut-être les dossiers de recherche. Les chercheurs prendront toutes les mesures possibles pour protéger la confidentialité de vos dossiers. Deux différents dossiers sur les résultats du participant à l'examen gynécologique seront conservés. Les dossiers cliniques incluront votre nom et les résultats de l'examen gynécologique. Les résultats de l'entrevue et des questionnaires ne seront pas conservés dans les dossiers de l'hôpital et seront accessibles seulement par les membres de l'équipe de recherche. Ces dossiers seront identifiés uniquement par un nombre de recherche et n'incluront pas votre nom. Les résultats de l'examen d'imagerie fonctionnelle seront gardés strictement confidentiels, votre nom n'apparaîtra pas sur les fichiers informatiques. Aucune information personnelle ne sera divulguée à une tierce personne sans votre consentement écrit. Votre identité ne sera jamais divulguée dans aucunes présentations des résultats de cette étude.

CONSTATS FORTUITS:
Les résultats du scanner ne seront pas soumis à une révision clinique. Toutefois, tout constat fortuit vous sera communiqué et, à votre demande, transmit à votre médecin.

INTERRUPTION DE L'ÉTUDE PAR L'INVESTIGATEUR:
En tout temps, les investigateurs se réservent le droit d'interrompre et de mettre fin à l'examen pour des raisons scientifiques.

COMPENSATION POUR LA PARTICIPATION À CETTE ÉTUDE:
Après avoir terminer de compléter les différents examens et études d'imagerie fonctionnelle, vous recevrez une compensation de 150$ pour votre temps et tous inconvénients. Si les examens doivent être interrompus pour des raisons scientifiques, une compensation sera réglée en conséquence de la fraction de l'étude complétée.

LA DÉCLARATION DU SUJET CONCERNANT SON RETRAIT DE L'ÉTUDE:
Je comprends que ma participation à cette étude est volontaire et je peux me désister en tout temps même lors de la procédure sans recevoir aucun préjugés sur moi ou sur mon traitement.

CONTACTS:
Vous pouvez être contacter par un membre du Comité D'Éthiques de Recherches. Si vous avez des questions, des commentaires ou des insatisfactions en rapport avec cette étude vous pouvez communiquer avec un des investigateurs principaux (398-5323). Les questions concernant les droits des sujets de recherches devraient être dirigées au Représentant des patients à l'institut Neurologique de Montréal (Andrew Steinmetz, 398-5358) ou à l'Hôpital Royal Victoria (Pat O'Rourke, 842-1231, poste 5655).

QUESTIONNAIRE ET DÉCLARATION DE CONSENTEMENT

Chirurgies antérieures (type et date) : _____

Le sujet porte-t-il un ou plusieurs des éléments suivants ?	OUI	NON
Stimulateur cardiaque (pacemaker)	☐	☐
"Clip" d'anévrisme ou "clip" sur un autre vaisseau	☐	☐
"Clip" chirurgical ou valve cardiaque	☐	☐
Prothèse (veuillez préciser le type et l'organe)	☐	☐
Implants (veuillez préciser le type et l'organe)	☐	☐
Métal ou fragments métalliques dans le corps (veuillez préciser)	☐	☐
Le sujet est-elle enceinte ou allaite-t-elle ?	☐	☐
Est-ce que le sujet prend des médicaments prescrits ? (Spécifiez) : _____	☐	☐

DÉCLARATION DE CONSENTEMENT DU SUJET

Je soussignée _____ ai pris connaissance de ce qui précède en présence de l'un des investigateurs suivants _____.

J'ai parfaitement compris les procédures, les avantages et les inconvénients de cette étude. Je consens volontairement à participer à cette étude. Il est entendu par ailleurs que je suis libre de désister de ce protocole à tout moment si je le souhaite et que toute donnée me concernant restera confidentielle.

Sujet

Nom	Signature	Date	No. de contact

Chercheur

Nom	Signature	Date	No. de contact

Témoin

Nom	Signature	Date	No. de contact

Appendix 3 –

Research Compliance Certificates

McGill

Faculty of Medicine
3655 Drummond Street
Montreal, QC H3G 1Y6
Fax: (514) 398-3595

Faculté de médecine
3655, rue Drummond
Montréal, QC, H3G 1Y6
Télécopieur: (514) 398-3595

December 15, 1998

Irving Binik, PhD
Department of Psychology
Stewart Biological Sciences Building
1205 Dr. Penfield Avenue
Montreal, Quebec
H3A 1B1

Dear Dr. Binik:

We are writing in response to the request for an amendment by the Institutional Review Board to the study entitled "An Investigation of Tactile Detection and Pain Thresholds in Women with Vulvar Vestibulitis"

We are pleased to inform you that approval for Amendment #1 (November 23, 1998) and revised consent document version 2 (November 1998) was provided on December 15, 1998.

Yours sincerely,

J. Lawrence Hutchison, M.D.
Chair
Institutional Review Board

cc: Dr. J. Mendelson
Ms. J. Turner
REB files JGH/RVH
A06-B25-96

MONTREAL NEUROLOGICAL INSTITUTE AND HOSPITAL

INSTITUT ET HÔPITAL NEUROLOGIQUES DE MONTRÉAL

A Teaching and Research Institute of McGill University

Institut d'enseignement et de recherche de l'Université McGill

January 12, 2001

Dr. M.C. Bushnell
Aerospace Medical Research Unit
McIntyre Medical Sciences Building
Room 1220
3655 Drummond Street
Montreal, Qc H3G 1Y6

Dear Dr. Bushnell:

RE: Neural Correlates of Pain in Women with vulvar Vestibulitis Syndrome as Evaluated by fMRI

At its meeting on January 9, 2001, the MR Research Committee reviewed the protocol you submitted to perform fMRI studies on 20 to 30 individuals.

Approval has been granted by the committee for a period of one year with the following minor modifications:

i. In order to preserve the confidentiality of the patients, the subjects' names can be encoded at the time of scanning. This should be stated in the protocol.

ii. Under Item 11 of the protocol and under *Confidential Nature of this Study* in the consent form, please remove the reference to the Atomic Energy Control Board of Canada as this is not required.

iii. While the committee appreciated the potential of this research, it was felt that the findings and the interpretations of the imaging portion of the study could be more clearly and fully explained and this explanation should be included for the ethics review.

When these changes have been incorporated into the document, please submit a copy of the revised version to Jennifer Chew, McConnell Brain Imaging Centre, Room WB317, Montreal Neurological Institute.

Bruce Pike, Ph.D.
Coordinator - McCo
Brain Imaging C
Tel: (514) 398-1929
Fax: (514) 398-2975

Douglas C. Arnold,
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Fax: (514) 398-8948

C.J. Thompson, Ph.D
Tel: (514) 398-8505
Fax: (514) 398-8948

CENTRE D'IMAGERIE CÉRÉ
McCONNELL BRAIN IMAGING C

3801, rue University
Montréal, Québec
Canada H3A 2B4
Téléphone (514) 398
Télécopieur/Fax (514,

All scanning for this project will be performed on theSiemens 1.5T scanner and scheduling of scans should be done via the MRI receptionist (X 8510). Any questions concerning billing should be directed to Elizabeth Kofron of NSI (X 1903).

Sincerely,

Bruce Pike, Ph.D.
Chair, MR Research Committee

cc: Dr. Elizabeth Kofron
Mr. Gilles Leroux
Ms. Lora Tombari

Appendix 4 –

Structured Interviews

Structured Interview

Sensory Study

Initial Interview

Subject Number _____

Group _____

Interviewer _____

Date of Interview _____

PART A: Socio-Demographic Information

1) Date of birth _____/_____/_____ Age: _____
mo day year

2) Place of birth

1) Canada
2) United States
3) Eastern Europe
4) Western Europe
5) Africa
6) Asia
7) Australia
8) Middle East
9) Latin/South America
10) Caribbean

3) What culture do you see yourself as most associated with?

1) Canadian
2) Québecoise
3) American
4) Irish/Scottish/Welsh
5) Native American
6) Greek/Italian Cdn
7) Eastern European
8) Western European
9) African
10) Asian
11) Australian
12) Middle Eastern
13) Latin/South American
14) Caribbean

4) What is your mother tongue?
1) English
2) French
3) Other (please specify:_____)

5) In what religion were you brought up?
1) Catholic
2) Protestant
3) Jewish
4) None
5) Other (please specify:_____)

6) How many years of schooling do you have? _____

7) What is the approximate total annual income of your household?

1) $ 0 - $ 9,999
2) $10,000 - $19,999
3) $20,000 - $29,999
4) $30,000 - $39,999
5) $40,000 - $49,999
6) $50,000 - $59,999
7) $60,000 and over

PART B: Relationship History

1) Which of the following best describes your current situation?
   1) no regular partner at the moment
   2) dating one partner regularly
   3) living with a partner
   4) married

2) How long have you been in this situation?
   _____years_____months

3) Have you *ever* had full penile-vaginal intercourse? 1) YES 2) NO

   ⇨ if *yes*, continue; if *no*, discontinue questionnaire

4) How old were you when you had intercourse for the first time? _____ years old

5) Do you remember it as being painful? 1) YES 2) NO
   ⇨ if *no*, go to number 7

6) On a scale of 0 to 10, please rate the pain you experienced during your first intercourse. N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

7) Do you remember it as being distressing? 1) YES 2) NO
   ⇨ if *no*, go to number 9

8) On a scale of 0 to 10, please rate the distress you experienced during your first intercourse. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

9) What is the total number of partners you have had intercourse with? (include one-night stands) _____

10) Have you ever experienced childbirth? 1) YES 2) NO

   If YES, please specify number of children _____

PART C: Gynecological History

1) Do you menstruate regularly (approximately once a month)? 1) YES 2) NO

If no, why not? _____

2) What was the start date of your last menstrual period?

_____/_____/_____
mo day year

[coding: 1) Follicular (few days after menstruation)
2) Ovulatory (about 2 weeks after start of last menstruation)
3) Luteal (after ovulation, few days before menstrual onset)
4) Menstrual]

3) On a scale of 0 to 10, please rate the pain you experience during your menstrual periods.

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

4) On a scale of 0 to 10, please rate the distress you experience during your menstrual periods.

0	1	2	3	4	5	6	7	8	9	10
not distressing at all								distress		most ever felt

5) Do you or your partner use any method(s) of contraception? 1) YES 2) NO

If yes, which one(s)? _____
If using the pill, which brand? _____

6) How many yeast infections have you had in the past? _____
⇨ if 0, go to number 12

7) How were they diagnosed? N/A

1) clinical plus positive culture: Number of times _____
2) clinical only: Number of times _____
3) self-diagnosed: Number of times _____

8) Have you had repeated yeast infections in the past? 1) YES 2) NO 3) DK 4) N/A

9) Did you experience pain with intercourse during these vaginal infections?
1) YES 2) NO 3) N/A 4) Don't remember 5) Had no intercourse during infections
⇨ if *no, don't remember, or had no intercourse,* go to number 12

10) On a scale of 0 to 10, please rate the intercourse pain you experience with vaginal infections. N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

11) On a scale of 0 to 10, please rate the distress you experience with painful intercourse due to vaginal infections. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

12) What other types of gynecological problems have you had (check all applicable):
1) Chlamydia ____
2) Gardnerella vaginalis ____
3) Genital herpes ____
4) Genital warts ____
5) Gonorrhea ____
6) H.I.V. ____
7) Syphilis ____
8) Trichomoniasis ____
9) Bladder/urinary infections ____
10) Interstitial cystitis ____ (when? _____)
11) Pelvic inflammatory disease ____ (when? _____)
12) Endometriosis ____ (when? _____)
13) Other (please specify: _____)
14) None

13) What kind of gynecological interventions have you had (Check all applicable):
1) Hysterectomy ____
2) Laparoscopy ____
3) Ovariectomy ____
4) Tubal ligation ____
5) C & T ____
6) Abortion ____
7) Other (please specify:_____) 8) None

➜ Do you presently experience, or have you ever experienced, recurrent and persistent pain during intercourse?

⇨ if *no*, proceed to **PART D**
⇨ if *yes*, ask whether she has experienced intercourse pain in the past 6 months
⇨ if *yes*, proceed to **PART E** and **PART F**
⇨ if *no*, proceed to **PART E** and **PART G**

PART D: No pain during intercourse

1) Most women have experienced some discomfort with vaginal penetration at one point or another during their lives. Have you ever experienced discomfort during the following? (Check all applicable)
   1) penile-vaginal penetration
   2) finger-vaginal penetration with a partner
   3) finger-vaginal insertion during a gynecological examination
   4) speculum insertion during a gynecological examination
   5) Pap smear during a gynecological examination
   6) tampon insertion
   7) tampon removal
   8) insertion (of _____) during yeast infection
   9) other (please specify:_____)
   10) none

2) ⇨ *If more than one activity was chosen*: Which one produced the most discomfort?
   _____ N/A (proceed to number 3)
   ⇨ *If only one was chosen*, proceed to number 3
   ⇨ *If none was chosen*, proceed to number 6

3) Where did you feel this discomfort? Is there a specific spot you can show me? Where? (May select more than one; show model and code on diagram) N/A
   1) at the vaginal opening (diagram 1)
   2) everywhere on the vulva (diagram 1)
   3) inside the vagina (diagram 2)
   4) in the pelvic or abdominal region (diagram 3)
   ⇨ ***administer the MPQ***

4) On a scale of 0 to 10, please rate the discomfort you experienced with this activity. N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

5) On a scale of 0 to 10, please rate the distress you experienced with this activity. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

6) Over the past 6 months, approximately how many times have you had intercourse?
   _____ ⇨ if 0, proceed to number 8

7) Typically, what percentage of intercourse occasions have been painful? _____
⇨ proceed to number 12

8) How long has it been since you last had intercourse? _____months _____years

9) What is the reason that you have not had intercourse in the past 6 months?

1) I have no partner at the moment 2) It hurts too much
3) I have no desire 4) I fear pain
5) I am too anxious 6) I don't want penetration
7) my partner has erection problems 8) my partner has no desire
9) my partner is concerned about hurting me
10) Other (please specify:_____)

10) In the past, approximately how many times per month were you having intercourse?
_____

11) Typically, what percentage of intercourse occasions were painful? _____

12) Do you *regularly* suffer from any of the following pains (check as many as apply):

1) stomach aches 2) menstrual cramps
3) neck pain 4) pain in kidneys
5) sore throat 6) toothaches
7) earaches 8) arthritis (where _____)
9) back pain 10) chest pain
11) headaches 12) muscle pain (where _____)
13) other (specify: _____) 14) None

13) On a scale of 0 to 10, please rate the intensity of this/the worst pain. N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

14) On a scale of 0 to 10, please rate the intensity of the distress you experience during this/the worst pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

⇨ ***administer the PCS*** with respect to PAIN IN GENERAL
⇨ discontinue questionnaire

PART E: Pain with Intercourse History

1) When did you first start experiencing pain with intercourse?

_____month _____year

2) How did it start? (Check all that apply)
   1) with first experience
   2) after repeated yeast infections
   3) after childbirth
   4) for no apparent reason
   5) change of partner
   6) after repeated bladder infections
   7) with onset of menopause
   8) after gynecological surgery (please specify: _____)
   9) life stress (e.g., marital conflict, financial problems; specify: _____)
   10) after an abortion
   11) Other (please specify:_____)

3) Has there ever been a period of one month or 6 intercourse occasions in a row during which you experienced pain-free intercourse?
   1) YES – why? _____
   2) NO
   3) DK

4) How many health professionals have you consulted for the intercourse pain? _____

5) What diagnoses and treatments were you given by the health professionals to whom you reported the pain?
   Please list the name of every diagnosis, medication/treatment you remember receiving and the number of times you took/underwent the prescribed treatment.
   N/A None given

Diagnosis	Treatment	Number of times taken
_____	_____	1) <10 2) >10 3) DK
_____	_____	1) <10 2) >10 3) DK
_____	_____	1) <10 2) >10 3) DK
_____	_____	1) <10 2) >10 3) DK
_____	_____	1) <10 2) >10 3) DK

6) Have you ever attempted to treat or alleviate the pain? NO
If *yes*, how? (circle all that apply)

1) Changing aspects of sex life (e.g., position, speed, enhancing arousal)
2) Creams (e.g., K-Y, Crisco, moisturizers, corticosteroids, hormonal, anesthetics)
3) Alternative medicine (e.g., vitamins, diets, homeopathic remedies, physiotherapy)
4) Psychological treatments (e.g., psychotherapy, hypnosis, Kegels, biofeedback)
5) Surgery (e.g., vestibulectomy, laser, D&C)
6) Other medical treatments (e.g., hormones, interferon, antibiotics)
7) Small changes (e.g., cotton underwear, mild soaps, changing mattresses)
8) Other (please specify:_____)

PART F: (All women presently having intercourse)
Pain

1) Over the past 6 months, approximately how many times have you attempted intercourse per month? _____

2) Typically, what percentage of intercourse occasions have been painful? ____

3) When does the pain typically start?

1) before the penis touches the vaginal opening
2) when the penis starts to enter the vagina
3) when the penis has fully entered and is thrusting
4) after intercourse (how long does it last? _____)
5) Other (please specify:_____)

4) How long does the pain typically last?

1) during penile entry only
2) during penile thrusting only
3) only for a period after penile exit
4) during penile entry and after penile exit
5) during penile entry and during penile thrusting
6) during penile thrusting and for some time after penile exit
7) during penile entry, during penile thrusting, and after penile exit
8) it is never the same: there is no typical pattern

If it lasts after penile exit, please state for how long after the pain is felt.

Time: _____minutes _____hours _____days

5) Where do you typically feel the pain during intercourse? Is there a specific spot you can show me? If yes, where? (May select more than one; show model and code on diagram)

1) at the vaginal opening	(diagram 1)
2) everywhere on the vulva	(diagram 1)
3) inside the vagina	(diagram 2)
4) in the pelvic or abdominal region	(diagram 3)

⇨ ***administer the MPQ***

6) Can you differentiate the different pains indicated in #5?
1) YES 2) NO 3) DK 4) only one pain

⇨ If *yes, one pain, or don't know*, continue; ⇨ If *no*, proceed to number 15

7) On a scale of 0 to 10, please rate the average intensity of the pain at the *vaginal opening* (past 6 months). N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

8) On a scale of 0 to 10, please rate the average intensity of the distress you experience because of this pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

9) On a scale of 0 to 10, please rate the average intensity of the pain *everywhere on the vulva* (past 6 months). N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

10) On a scale of 0 to 10, please rate the average intensity of the distress you experience because of this pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

11) On a scale of 0 to 10, please rate the average intensity of the pain *inside the vagina* (past 6 months). N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

12) On a scale of 0 to 10, please rate the average intensity of the distress you experience because of this pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

13) On a scale of 0 to 10, please rate the average intensity of the pain in the *pelvic or abdom*inal region (past 6 months). N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

14) On a scale of 0 to 10, please rate the average intensity of the distress you experience because of this pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

15) On a scale of 0 to 10, please rate the average intensity of pain you experience during intercourse.

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

16) On a scale of 0 to 10, please rate the distress you experience during intercourse.

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

⇨ ***administer the PCS***

17) At which time of your menstrual cycle is the pain with intercourse worst?

1) All the time; no change
2) During menstruation
3) A few days before menstruation
4) A few days after menstruation
5) During ovulation (2 weeks before menstrual onset)
6) There is no typical pattern; it varies from month to month
7) other (please specify: _____)

18) Do you *regularly* suffer from any of the following pains (check as many as apply):

1) stomach aches
2) menstrual cramps
3) neck pain
4) pain in kidneys
5) sore throat
6) toothaches
7) earaches
8) arthritis (where _____)
9) back pain
10) chest pain
11) headaches
12) muscle pain (where _____)
13) other (specify: _____)
14) None

19) On a scale of 0 to 10, please rate the intensity of this/the worst pain. N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

20) On a scale of 0 to 10, please rate the intensity of the distress you experience during this/the worst pain.

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

⇨ ***administer the PCS*** with respect to pain IN GENERAL
⇨ discontinue questionnaire

PART G: (Women not having intercourse now)
Pain

1) How long has it been since you last had intercourse? _____months _____years

2) What is the reason that you have not had intercourse in the past 6 months?

1) I have no partner at the moment
2) It hurts too much
3) I have no desire
4) I fear pain
5) I am too anxious
6) I don't want penetration
7) my partner has erection problems
8) my partner has no desire
9) my partner is concerned about hurting me
10) Other (please specify:_____)

3) In the past, approximately how many times per month were you attempting intercourse per month? _____

4) Typically, what percentage of intercourse occasions were painful? _____

5) When did the pain typically start?

1) before the penis touches the vaginal opening
2) when the penis starts to enter the vagina
3) when the penis has fully entered and is thrusting
4) after intercourse (how long does it last? _____)
5) Other (please specify:_____)

6) How long did the pain typically last?

1) during penile entry only
2) during penile thrusting only
3) only for a period after penile exit
4) during penile entry and after penile exit
5) during penile entry and during penile thrusting
6) during penile thrusting and for some time after penile exit
7) during penile entry, during penile thrusting, and after penile exit
8) it is never the same: there is no typical pattern

If it lasted after penile exit, please state for how long after the pain was felt.

Time: _____minutes _____hours _____days

7) Where did you typically feel the pain during intercourse? Is there a specific spot you can show me? If yes, where? (May select more than one; show model and code on diagram)

1) at the vaginal opening (1)
2) everywhere on the vulva (1)
3) inside the vagina (2)
4) in the pelvic or abdominal region (3)

⇨ ***administer the MPQ***

8) Can you differentiate the different pains indicated in #7?

1) YES 2) NO 3) DK 4) only one pain

⇨ If *yes, one pain, or don't know*, continue

⇨ If *no*, proceed to number 17

9) On a scale of 0 to 10, please rate the average intensity of the pain at the *vaginal opening*. N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

10) On a scale of 0 to 10, please rate the average intensity of the distress you experienced because of this pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

11) On a scale of 0 to 10, please rate the average intensity of the pain *everywhere on the vulva.*
N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

12) On a scale of 0 to 10, please rate the average intensity of the distress you experienced because of this pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

13) On a scale of 0 to 10, please rate the average intensity of the pain *inside the vagina.* N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

14) On a scale of 0 to 10, please rate the average intensity of the distress you experienced because of this pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

15) On a scale of 0 to 10, please rate the average intensity of the pain in the *pelvic or abdom*inal region. N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

16) On a scale of 0 to 10, please rate the average intensity of the distress you experienced because of this pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

17) On a scale of 0 to 10, please rate the average intensity of pain you experienced during intercourse.

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

18) On a scale of 0 to 10, please rate the distress you experienced during intercourse.

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

⇨ ***administer the PCS***

19) At which time of your menstrual cycle is the pain with intercourse worst?

1) All the time; no change
2) During menstruation
3) A few days before menstruation
4) A few days after menstruation
5) During ovulation (2 weeks before menstrual onset)
6) There is no typical pattern; it varies from month to month
7) other (please specify: _____)

20) Do you *regularly* suffer from any of the following pains (check as many as apply):

1) stomach aches
2) menstrual cramps
3) neck pain
4) pain in kidneys
5) sore throat
6) toothaches
7) earaches
8) arthritis (where _____)
9) back pain
10) chest pain
11) headaches
12) muscle pain (where _____)
13) other (specify: _____)
14) None

21) On a scale of 0 to 10, please rate the intensity of this/the worst pain. N/A

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

22) On a scale of 0 to 10, please rate the intensity of the distress you experience during this/the worst pain. N/A

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

⇨ ***administer the PCS*** with respect to pain IN GENERAL
⇨ discontinue questionnaire

Entrevue Dirigée

Etude Sensorielle

Entrevue Initiale

Numéro du sujet_____

Groupe _____

Intervieweur_____

Date de l'entrevue_____

SECTION A: Information Socio-Démographique

1) Date de naissance _____/_____/_____ Age: _____
mois jour année

2) Lieu de naissance

1) Canada	2) Etats-Unis	3) Europe de l'Est
4) Europe de l'Ouest	5) Afrique	6) Asie
7) Australie	8) Moyen-Orient	9) Amérique Latine/du Sud
10) Caraïbes		

3) Quelle est la culture à laquelle vous vous sentez le plus étroitement liée?

1) Canadienne	2) Québécoise	3) Américaine
4) Irlandais/Ecossaise/Galloise		5) Autochtone
6) Greco/Italienne	7) Européenne de l'Est	8) Euro. de l'Ouest
9) Africaine	10) Asiatique	11) Australienne
12) Moyen-Orient	13) Latino/Sud-Américaine	14) Caraïbes

4) Quelle est votre langue maternelle?
1) Anglais
2) Français
3) Autre (_____)

5) Dans quelle religion avez-vous été élevée?
1) Catholique
2) Protestante
3) Juive
4) Autre (_____)

6) Combien d'années de scolarité avez-vous? _____

7) Quel est le revenu annuel approximatif de votre ménage?

1) $ 0 - $ 9,999	4) $30,000 - $39,999	7) $60,000 et plus
2) $10,000 - $19,999	5) $40,000 - $49,999	
3) $20,000 - $29,999	6) $50,000 - $59,999	

SECTION B: Histoire Relationnelle

1) Lequel des points suivants décrit le mieux votre statut civil actuel?
   1) célibataire non engagée dans une relation
   2) célibataire avec un partenaire régulier
   3) en union de fait
   4) mariée

2) Depuis combien de temps êtes-vous dans la situation encerclée ci-dessus?
   _____années_____mois

3) Avez-vous déjà eu des relations sexuelles avec pénétration? 1) OUI 2) NON
   ⇨ Si *oui*, continuez, si *non*, arrêtez

4) À quel âge avez-vous eu votre première relation sexuelle? _____

5) Était-elle douleureuse? 1) OUI 2) NON
   ⇨ Si *non*, allez au numéro 7

6) Évaluez sur une échelle de 0 à 10, s'il vous plait, la douleur ressentie pendant vos premières relations sexuelles.
   N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

7) Était-elle alarmante? 1) OUI 2) NON
   ⇨ Si *non*, allez au numéro 9

8) Évaluez sur une échelle de 0 à 10, s'il vous plait, le désarroi ressenti/la peur ressentie pendant vos premières relations sexuelles.
   N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

4) Quel est le nombre total de partenaires avec qui vous avez eu des relations sexuelles (incluant les aventures d'un soir) _____

9) Avez-vous déjà accouché? OUI NON
   Si OUI, spécifiez le nombre d'enfants _____

SECTION C: Histoire Gynécologique

1) Êtes-vous menstruée régulièrement(≈une fois par mois)? 1) OUI 2) NON

Sinon, pourquoi pas? _____

2) Quelle était la date au début de votre dernière menstraution?

_____/_____/_____
mois jr année

[coding: 1) Folliculaire (quelques jours après les menstruations)
2) Ovulatoire (environ 2 semaines après le début de la dernière menstruation
3) Luteal (après l'ovulation, quelques jours avant le cycle menstuel)
4) Menstruel]

3) Évaluez sur une échelle de 0 à 10 l'intensité de la douleur que vous ressentez lors de vos menstruations.

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

4) Évaluez sur une échelle de 0 à 10 l'intensité du désarroi que vous ressentez lors de vos douleurs menstruelles.

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

5) Vous ou votre partenaire utilisez-vous des méthods contraceptives? 1) OUI 2) NON

Si oui, lesquelles? _____
Si c'est la pilule, quelle sorte? _____

6) Combien d'infections vaginales avez-vous eu dans le passé? _____
⇨ si 0, allez au numéro 12

7) Comment les infections ont-elles été diagnostiquées? N/P

1) avis du médecin et cultures positives: Combien de temps _____
2) avis du médecin seulement: Combien de temps _____
3) auto-diagnostic: Combien de temps _____

8) Avez-vous eu des infections vaginales à répétition dans le passé?
1)OUI 2)NON 3)SP 4)N/P

9) Est-ce que vous ressentez de la douleur pendant les relations sexuelles quand vous avez des infections vaginales? 1)OUI 2)NON 3) N/P 4) souviens pas 5) pas de relations

⇨ Si *non, souviens pas, ou pas de relations,* allez au numéro 12

10) Sur une échelle de 0 à 10, évaluez la douleur pendant les relations sexuelles quand vous avez des infections vaginales. N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

11) Sur une échelle de 0 à 10, évaluez le niveau de désarroi que vous ressentez pendant les relations sexuelles quand vous avez des infections vaginales. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

12) Quel autre type de problème gynécologique avez-vous eu? (Cochez tout ce qui s'applique)

1) Chlamydia ____
2) Gardnerella vaginalis ____
3) Herpes génital ____
4) Condylomes ____
5) Gonorrhée ____
6) V.I.H. ____
7) Siphyllis ____
8) Trichomoniasis ____
9) Vessie/infections urinaires (quand? _____)
10) Cystites (quand? _____)
11) Maladie inflammatoire pelvienne (quand?_____)
12) Endométriose (quand? _____)
13) Autre (veuillez spécifier: _____)
14) Aucune

13) Quelle sorte d'interventions gynécologiques avez-vous subi? (Cochez tout ce qui s'applique)

1) Hystérectomie_____
2) Laparoscopie_____
3) Ovariectomie_____
4) Ligatures des trompes_____
5) Curtage_____
6) Avortement
7) Autre: (veuillez spécifier: _____)
8) Aucune

➜ Ressentez-vous ou avez-vous déjà ressenti une douleur passagère ou chronique pendant les relations sexuelles?

⇨ si *non*, continuez à la **PARTIE D**

⇨ si *oui*, durant les derniers 6 mois?

⇨ si *oui*, allez à la **PARTIE E** et **F**

⇨ si *no*n, allez allez à la **PARTIE E** et **G**

SECTION D: Aucune douleur pendant les relations sexuelles

1) La plupart des femmes ont ressenti de l'inconfort une fois ou l'autre dans leur vie au cours de la pénétration vaginale. Avez-vous déjà ressenti de l'inconfort durant: (Cochez tout ce qui s'applique)
   1) pénétration vaginale avec pénis
   2) pénétration vaginale avec le doigt (partenaire)
   3) insertion du doigt pendant un examen gynécologique
   4) insertion du spéculum pendant un examen gynécologique
   5) test "Pap"pendant un examen gynécologique
   6) insertion d'un tampon
   7) enlèvement d'un tampon
   8) insertion (de _____) pendant un infection vaginale
   9) autre (veuillez spécifier:_____)
   10) aucune

2) ⇨ *si plus d'une activité*: Laquelle était la plus inconfortable? _____(continuez #3)
   ⇨ *si une activité*, continuez au numéro 3
   ⇨ *si aucune*, continuez au numéro 6

3) Où avez-vous ressenti de la douleur? Pouvez-vous me montrer où? (Elles peuvent sélectionnées plus q'un endroit sur le diagramme) N/P
   1) à l'entrée du vagin (diagramme 1)
   2) partout sur la vulve (diagramme 1)
   3) dans le vagin (diagramme 2)
   4) dans la région pelvienne ou abdominale (diagramme 3)
   ⇨***administrez le MPQ***

4) Sur une échelle de 0 à10, évaluez le niveau d'inconfort ressenti pendant cette activité. N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

5) Sur une échelle de 0 à10, évaluez le niveau de désarroi ressenti pendant cette activité. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

6) Durant les derniers 6 mois, combien de relations sexuelles à peu près avez-vous eu?
   _____ ⇨ si 0, continuez au numéro 8

7) En moyenne, quel est le pourcentage de relations douleureuses? _____ (#12)

8) Ça fait combien de temps que vous avez eu des relations sexuelles? __mois ___années

9) Quelle est la raison de cette abstinence pendant les derniers 6 mois?

1) Je n'ai pas de partenaire présentement
2) Ça me fait trop mal
3) Je n'ai aucun désir
4) Je crains la douleur
5) Je suis trop inquiète
6) Je ne veux aucune pénétration
7) Mon conjoint a un problème d'érection
8) Mon conjoint n'a aucun désir
9) Mon conjoint ne veut pas me faire mal
10) autre (veuillez spécifier:_____)

10) Par le passé combien de fois par mois avez-vous des relations sexuelles? _____

11) Environ quel pourcentage de relations était douleureux? _____

12) Souffrez-vous *régulièrement* des douleurs suivantes? (Cochez tous les points):

1) Maux de ventre
2) Douleurs menstruelles
3) Mal de cou
4) Mal de reins
5) Mal de gorge
6) Mal de dents
7) Mal d'oreilles
8) Douleurs arthritiques (où _____)
9) Mal de dos
10) Mal d'estomac
11) Mal de tête
12) Douleurs musculaires (où _____)
13) Autre (veuillez spécifier_____) 14) Aucune

13) Sur une échelle de 0 à 10, évaluez l'intensité de cette douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

14) Sur une échelle de 0 à 10, évaluez le niveau de désarroi ressenti pendant le pire de la douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

⇨ ***administrez la PCS*** en rapport avec la douleur EN GÉNÉRAL
⇨ arrêtez le questionnaire

SECTION E: Histoire de la Douleur

1) Quand avez-vous commencé à ressentir de la douleur pendant les relations sexuelles?
_____mois _____année

2) Comment cela a-t-il commencé? (Cochez tout ce qui s'applique)

1) avec ma première relation sexuelle
2) après des infections vaginales répétées
3) après avoir accouché
4) sans raison apparente
5) quand j'ai changé de partenaire
6) après des infections urinaires répétées
7) avec l'arrivé de ma ménopause
8) après une chirurgie gynécologique
9) après un stress important (e.g., conflit conjugal, problèmes financiers, etc)
10) après un avortement
11) autre _____

3) Y-a-t-il eu une période de 1 mois ou six relations sexuelles en ligne qui n'ont pas fait mal?

1) OUI – pourquoi?_____
2) NON
3) S/P

4) Combien de professionnels de la santé avez vous consulté pour votre douleur? _____

5) Quels diagnostics et quels traitements vous ont été donnés par les professionnels de la santé à qui vous avez parlé de votre douleur?
Veuillez dresser la liste de tous les diagnostics et médicaments/traitements dont vous vous souvenez ainsi que le nombre de fois que vous avez pris/subi le traitemente prescrit.
N/P___ Pas de diagnostic ___

Diagnostic	Traitement	Nombre de fois reçu
_____	_____	1) <10 2) >10 3) SP
_____	_____	1) <10 2) >10 3) SP
_____	_____	1) <10 2) >10 3) SP
_____	_____	1) <10 2) >10 3) SP
_____	_____	1) <10 2) >10 3) SP

6) Avez-vous déjà essayé de traiter ou de soulager la douleur vous même? Pas essayé __
Si *oui*, comment? (Cochez tout ce qui s'applique)

1) En changeant mon style de vie sexuelle (e.g., position, vitesse, films érotiques)
2) Des crèmes (e.g., K-Y, Crisco, hydratantes, corticosteroïdes, hormonales, anesthésiques)
3) La médicine alternative (e.g., les vitamines, les diètes, les remèdes homéopathiques, la physiothérapie)
4) Les traitements psychologiques (e.g., la psychothérapie, l'hypnose, Kegels, le biofeedback)
5) La chirurgie (e.g., la vestibulectomie, le laser, le curetage)
6) Autres traitements médicaux (e.g., les hormones, l'interferon, les antibiotiques)
7) Des petits changements (e.g., des sous-vêtements de coton, des savons doux, un changement de matelas)
8) Autre (veuillez spécifier:_____)

SECTION F: (Pour les femmes ayant présentement des relations sexuelles)
Douleur

1) Durant les derniers 6 mois, environ combien de fois par mois avez-vous essayé d'avoir des relations sexuelles?_____

2) Environ quel pourcentage de relations a été douleureux? ____

3) Quand la douleur commence-t-elle habituellement?
   1) avant que le pénis ne touche l'entrée du vagin
   2) quand le pénis commence à entrer dans le vagin
   3) quand le pénis a complètement pénétré le vagin et qu'il y a du va-et-vient
   4) aprés avoir eu des relations sexuelles (durée: _____)
   5) autre (veuillez spécifier_____)

4) Une fois la douleur apparue, durant quelles étapes de la relation sexuelle la ressentez-vous?
   1) seulement durant l'entrée du pénis
   2) seulement durant le mouvement de va-et-vient du pénis
   3) seulement un peu de temps après la sortie du pénis
   4) durant l'entrée du pénis et après sa sortie
   5) durant l'entrée du pénis et durant le mouvement de va-et-vient
   6) durant le mouvement de va-et-vient du pénis et quelque temps après sa sortie
   7) à l'entrée du pénis, durant son mouvement de va-et-vient, et après sa sortie
   8) ce n'est jamais pareil; il n'y a pas de "pattern"

S'il y a lieu, indiquez la durée de la douleur après le retrait du pénis.
Durée:_____minutes_____heures _____ jours

5) À quelle endroit de la région génitale ressentez-vous habituellement la douleur lors des relations sexuelles? Pouvez-vous m'indiquer un endroit précis? Si oui, où? (Vous pouvez choisir plus d'un endroit; montrez modèle et codez sur le diagramme)

1) à l'entrée du vagin	(diagramme 1)
2) partout sur la vulve	(diagramme 1)
3) à l'intérieur du vagin	(diagramme 2)
4 dans la région pelvienne ou abdominale	(diagramme 3)

⇨ ***administrez le MPQ***

6) Pouvez-vous faire la différence entre les douleurs indiquées au #5?
   1) OUI 2) NON 3) SP 4) seulement une douleur
   ⇨ Si oui, ne sais pas, ou seulement une douleur, continuez
   ⇨ Si non, allez à la question #15

7) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *à l'entrée du vagin* (dernier 6 mois). N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

8) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

9) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *partout sur la vulve* (dernier 6 mois). N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

10) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

11) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *à l'intérieur du vagin* (dernier 6 mois). N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

12) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

13) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur dans *la région abdominale* (dernier 6 mois).

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

14) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

15) Évaluez sur une échelle de 0 à 10 l'intensité de la douleur que vous ressentez lors des relations sexuelles (dernier 6 mois).

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

16) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

⇨ ***administrez la PCS***

17) A quelle période de votre cycle menstruel la douelur à la pénétration est-elle la pire?

1) C'est toujours pareil; elle ne varie pas
2) Durant la menstruation
3) Quelques jours avant la menstruation
4) Quelques jours après la menstruation
5) Durant l'ovulation (2 semaines avant le commencement de la menstruation)
6) Ce n'est jamais pareil de mois en mois; il n'y a pas de "pattern"

18) Souffrez-vous *régulièrement* des douleurs suivantes? (Cochez tous les points qui s'appliquent).

1) Maux de ventre
2) Douleurs menstruelles
3) Mal de cou
4) Mal de reins
5) Mal de gorge
6) Mal de dents
7) Mal d'oreilles
8) Douleurs arthritiques (où _____)
9) Mal de dos
10) Mal d'estomac
11) Mal de tête
12) Douleurs musculaires (où _____)
13) Autre (veuillez spécifier_____)
14) Aucune

19) Sur une échelle de 0 à 10, évaluez le niveau de cette/la pire douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

20) Sur une échelle de 0 à 10, évaluez le niveau de désarroi ressenti pendant cette/la pire douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

⇨ ***administrez la PCS*** selon la douleur EN GÉNÉRAL
⇨ arrêtez le questionnaire

SECTION G: (Pour les femmes n'ayant pas de relations sexuelles)
Douleur

1) Combien de temps cela fait-il que vous n'avez pas eu de relations sexuelles?
_____ mois _____ années

2) Quelle est la raison pour laquelle vous n'avez pas eu de relations sexuelles dans les derniers 6 mois?
   1) Je n'ai pas de partenaire présentement
   2) Ça me fait trop mal
   3) Je n'ai aucun désir
   4) Je crains la douleur
   5) Je suis trop inquiète
   6) Je ne veux aucune pénétration
   7) Mon conjoint a un problème d'érection
   8) Mon conjoint n'a aucun désir
   9) Mon conjoint ne veut pas me faire mal
   10) autre (veuillez spécifier:_____)

3) Dans le passé, environ combien de fois par mois avez-vous essayé d'avoir des relations sexuelles? _____

4) Environ quel pourcentage des relations faisait mal? _____

5) Quand la douleur commence-t-elle habituellement?
   1) avant que le pénis ne touche l'entrée du vagin
   2) quand le pénis commence à entrer dans le vagin
   3) quand le pénis a complètement pénétré le vagin et qu'il y a du va-et-vient
   4) après avoir eu des relations sexuelles (durée: _____)
   6) autre. (veuillez spécifier_____)

6) Une fois la douleur apparue, durant quelles étapes de la relation sexuelle la ressentiez-vous?
   1) seulement durant l'entrée du pénis
   2) seulement durant le mouvement de va-et-vient du pénis
   3) seulement un peu de temps après la sortie du pénis
   4) durant l'entrée du pénis et après sa sortie
   5) durant l'entrée du pénis et durant le mouvement de va-et-vient
   6) durant le mouvement de va-et-vient du pénis et quelque temps après sa sortie
   7) à l'entrée du pénis, durant son mouvement de va-et-vient, et après sa sortie
   8) ce n'est jamais pareil; il n'y a pas de "pattern"

S'il y a lieu, indiquez la durée de la douleur après le retrait du pénis.
Durée:_____minutes_____heures _____ jours

7) À quelle endroit de la région génitale ressentiez-vous habituellement la douleur lors des relations sexuelles? Pouvez-vous m'indiquer un endroit précis? Si oui, où? (Vous pouvez choisir plus d'un endroit; montrez modèle et codez sur le diagramme)

1) à l'entrée du vagin	(diagramme 1)
2) partout sur la vulve	(diagramme 1)
3) à l'intérieur du vagin	(diagramme 2)
4) dans la région pelvienne ou abdominale	(diagramme 3)

⇨***administrez la MPQ***

8) Pouvez-vous faire la différence entre les douleurs indiquées au #5?
1) OUI 2) NON 3) SP 4) seulement une douleur
⇨ Si oui, ne sais pas, ou seulelment une douleur, continuez
⇨ Si non, allez à la question #15

9) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *à l'entrée du vagin.*
N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

10) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur.
N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

11) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *partout sur la vulve.* N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

12) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur.
N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

13) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *à l'intérieur du vagin.* N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

14) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

15) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur dans *la région abdominale.* N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

16) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

17) Évaluez sur une échelle de 0 à 10 l'intensité de la douleur que vous ressentiez lors des relations sexuelles.

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

18) Évaluez sur une échelle de 0 à 10 le niveau de désarroi ressenti à cause de la douleur.

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

⇨ ***administrez la PCS***

19) A quelle période de votre cycle menstruel la douelur à la pénétration est-elle la pire?

1) C'est toujours pareil; elle ne varie pas
2) Durant la menstruation
3) Quelques jours avant la menstruation
4) Quelques jours après la menstruation
5) Durant l'ovulation (2 semaines avant le commencement de la menstruation)
6) Ce n'est jamais pareil de mois en mois; il n'y a pas de "pattern"

20) Souffrez-vous régulièrement des douleurs suivantes? (Cochez tous les points qui s'appliquent).

1) Maux de ventre
2) Douleurs menstruelles
3) Mal de cou
4) Mal de reins
5) Mal de gorge
6) Mal de dents
7) Mal d'oreilles
8) Douleurs arthritiques (où _____)
9) Mal de dos
10) Mal d'estomac
11) Mal de tête
12) Douleurs musculaires (où _____)
13) Autre (veuillez spécifier_____) 14) Aucune

21) Sur une échelle de 0 à 10, évaluez le niveau de cette/la pire douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

20) Sur une échelle de 0 à 10, évaluez le niveau de désarroi ressenti pendant cette/la pire douleur. N/P

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

⇨ ***administrez la PCS*** selon la douleur EN GÉNÉRAL
⇨ arrêtez le questionnaire

Follow-Up Structured Interview

Sensory Study #2

Subject Number _____

Group _____

Interviewer _____

Date of Interview _____

PART A: Socio-Demographic Information

1) Date of birth _____/_____/_____ Age: _____
mo day year

2) How many years of schooling do you have? _____

3) What is the approximate total annual income of your household?

1) $ 0 - $ 9,999
2) $10,000 - $19,999
3) $20,000 - $29,999
4) $30,000 - $39,999
5) $40,000 - $49,999
6) $50,000 - $59,999
7) $60,000 and over

PART B: Relationship History

1) With which sexual orientation do you identify?
1) Heterosexual
2) Homosexual
3) Bisexual
4) Undecided

2) Which of the following best describes your current situation?
1) no regular partner at the moment
2) dating one partner regularly
3) living with a partner
4) married

3) Has this situation changed since we last met?
1) Yes
2) No

If YES, changed from _____

to _____

4) How long have you been in this situation?_____years_____months

5) Over the past 6 months, approximately how many times have you had intercourse?
_____ ⇨ if 0, proceed to #7

6) Typically, what percentage of intercourse occasions have been painful? _____
⇨ go to #11

7) How long has it been since you last had intercourse? _____months _____years

8) What is the reason that you have not had intercourse in the past 6 months?

1) I have no partner at the moment
2) It hurts too much
3) I have no desire
4) I fear pain
5) I am too anxious
6) I don't want penetration
7) my partner has erection problems
8) my partner has no desire
9) my partner is concerned about hurting me
10) Other (please specify:_____)

9) In the past, approximately how many times per month were you having intercourse?

_____

10) Typically, what percentage of intercourse occasions were painful? _____

11) What is the total number of partners you have had intercourse with? (include one-night stands) _____

12) Have you ever experienced childbirth? 1) YES 2) NO

If YES, please specify number of children _____

PART C: Gynecological History

1) Do you menstruate regularly (approximately once a month)? 1) Yes 2) No
If NO, why not? _____

2) Has this changed since we last met?
1) Yes
2) No

If YES, changed from _____

to _____

3) What was the start date of your last menstrual period?
_____/_____/_____
mo day year

[coding: 1) Follicular (few days after menstruation)
2) Ovulatory (about 2 weeks after start of last menstruation)
3) Luteal (after ovulation, few days before menstrual onset)
4) Menstrual]

4) Have you changed your method(s) of contraception or brand of oral contraceptive?
1) Yes
2) No

If YES, changed from _____

to _____

5) Have there been any changes in the number of yeast infections you have had since we last met?
1) Yes
2) No

If YES, has there been an increase or a decrease in the number of yeast infections you have had?

a) increased from _____ per _____ to _____ per _____

b) decreased from _____ per _____ to _____ per _____

6) Have you been diagnosed with any of the following gynecological problems since we last met?

1) Chlamydia ____
2) Gardnerella vaginalis ____
3) Genital herpes ____
4) Genital warts ____
5) Gonorrhea ____
6) H.I.V. ____
7) Syphilis ____
8) Trichomoniasis ____
9) Bladder/urinary infections ____
10) Interstitial cystitis ____ (when? _____)
11) Pelvic inflammatory disease ____ (when? _____)
12) Endometriosis ____ (when? _____)
13) Other (please specify: _____)
14) None

7) Have you undergone any gynecological interventions since we last met?

1) Hysterectomy ____
2) Laparoscopy ____
3) Ovariectomy ____
4) Tubal ligation ____
5) C & T ____
6) Abortion ____
7) Other (please specify:_____)
8) None

⇨ If control participant, discontinue questionnaire; if VVS participant, continue to next page.

PART D: Women With VVS

1) What treatment(s), if any, have you undergone for VVS since we last met?
   1) surgery (e.g., vestibulectomy, laser, D&C)
   2) other medical treatments (e.g., hormones, interferon, antibiotics)
   3) psychological treatments (e.g., individual/group psychotherapy, Kegels, biofeedback)
   4) alternative medicine (e.g., acupuncture, physiotherapy, vitamins, diets, homeopathic remedies)
   5) creams (e.g., K-Y, Crisco, moisturizers, corticosteroids, hormonal, anesthetics)
   6) small changes (e.g., cotton underwear, mild soaps, changing mattresses)
   7) other (please specify: _____)
      Continue to #7, N/A until #7
   8) no treatment undergone
      Proceed to #2

2) If **no treatment**: Have you noticed any change in your pain over time?
   1) Yes
   2) No

   If **YES**, has there been an a) increase or a b)decrease?

3) Please rate the pain you experienced in the past on a scale of 0 to 10, with 0 indicating no pain at all and 10 indicating the worst pain ever felt:

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

4) Please rate the distress you experienced in the past on a scale of 0 to 10, with 0 indicating that it was not distressing at all and 10 indicating the most distress ever felt:

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

5) Please rate the pain you currently experience on a scale of 0 to 10, with 0 indicating no pain at all and 10 indicating the worst pain ever felt:

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

6) Please rate the distress you currently experience on a scale of 0 to 10, with 0 indicating that it is not distressing at all and 10 indicating the most distress ever felt:

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

(if **no treatment**, N/A for #7-11, continue to #12)

7) Have you noticed any change in your pain since the last time we met due to treatment(s)?

1) Yes
2) No

if **YES**, has there been an a) increase or a b)decrease?

8) Please rate the pain you experienced in the past on a scale of 0 to 10, with 0 indicating no pain at all and 10 indicating the worst pain ever felt:

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

9) Please rate the distress you experienced in the past on a scale of 0 to 10, with 0 indicating that it was not distressing at all and 10 indicating the most distress ever felt:

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

10) Please rate the pain you currently experience on a scale of 0 to 10, with 0 indicating no pain at all and 10 indicating the worst pain ever felt:

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

11) Please rate the distress you currently experience on a scale of 0 to 10, with 0 indicating that it is not distressing at all and 10 indicating the most distress ever felt:

0	1	2	3	4	5	6	7	8	9	10
not distressing at all										most distress ever felt

12) Have you noticed any change in the pattern of the pain?

1) Yes
2) No

13) When did the pain typically start?

1) before the penis touches the vaginal opening
2) when the penis starts to enter the vagina
3) when the penis has fully entered and is thrusting
4) after intercourse (how long does it last? _____)
5) Other (please specify:_____)

And now? _____ N/A

14) How long did the pain typically last?

1) during penile entry only
2) during penile thrusting only
3) only for a period after penile exit
4) during penile entry and after penile exit
5) during penile entry and during penile thrusting
6) during penile thrusting and for some time after penile exit
7) during penile entry, during penile thrusting, and after penile exit
8) it is never the same: there is no typical pattern

And now? _____ N/A

15) Where did you typically feel the pain during intercourse?

1) at the vaginal opening
2) everywhere on the vulva
3) inside the vagina
4) in the pelvic or abdominal region

And now? _____ N/A

16) Would you describe the pain you have during the Q-tip test or during penetration as having an electric shock-like quality?

1) Yes
2) No

⇨ discontinue questionnaire

Entrevue Dirigée

Etude Sensorielle #2

Numéro du sujet_____

Groupe _____

Intervieweur_____

Date de l'entrevue_____

SECTION A: Information Socio-Démographique

1) Date de naissance _____/_____/_____ Age: _____
mois jour année

2) Combien d'années de scolarité avez-vous? _____

3) Quel est le revenu annuel approximatif de votre ménage?

1) $ 0 - $ 9,999
2) $10,000 - $19,999
3) $20,000 - $29,999
4) $30,000 - $39,999
5) $40,000 - $49,999
6) $50,000 - $59,999
7) $60,000 et plus

SECTION B: Histoire Relationnelle

1) A quelle orientation sexuelle identifiez-vous?
1) Heterosexuelle
2) Homosexuelle
3) Bisexuelle
4) Indécise

2) Lequel des points suivants décrit le mieux votre statut civil actuel?
1) célibataire non engagée dans une relation
2) célibataire avec un partenaire régulier
3) en union de fait
4) mariée

3) Est-ce que votre situation a changé depuis notre dernière rencontre?
1) Oui
2) Non

Si OUI, elle a changé de _____

à _____

4) Depuis combien de temps êtes-vous dans la situation encerclée ci-dessus?
_____années_____mois

5) Durant les derniers 6 mois, combien de relations sexuelles à peu près avez-vous eu?
_____ ⇨ si 0, continuez au numéro 7

6) En moyenne, quel est le pourcentage de relations douleureuses? _____
⇨ continuez au numéro 11

7) Ça fait combien de temps que vous avez eu des relations sexuelles? __mois ___années

8) Quelle est la raison de cette abstinence pendant les derniers 6 mois?

1) Je n'ai pas de partenaire présentement
2) Ça me fait trop mal
3) Je n'ai aucun désir
4) Je crains la douleur
5) Je suis trop inquiète
6) Je ne veux aucune pénétration
7) Mon conjoint a un problème d'érection
8) Mon conjoint n'a aucun désir
9) Mon conjoint ne veut pas me faire mal
10) autre (veuillez spécifier:_____)

9) Par le passé combien de fois par mois avez-vous des relations sexuelles? _____

10) Environ quel pourcentage de relations était douleureux? _____

11) Quel est le nombre total de partenaires avec qui vous avez eu des relations sexuelles (incluant les aventures d'un soir) _____

12) Avez-vous déjà accouché? OUI NON
Si OUI, spécifiez le nombre d'enfants _____

SECTION C: Histoire Gynécologique

1) Êtes-vous menstruée régulièrement(≈une fois par mois)? 1) OUI 2) NON

Sinon, pourquoi pas? _____

2) Est-ce cela a changé depuis votre dernière visite avec nous?
1) Oui
2) Non

Si OUI, elle a changé de _____

à _____

3) Quelle était la date au début de votre dernière menstraution?
_____/_____/_____
mois jr année

[coding: 1) Folliculaire (quelques jours après les menstruations)
2) Ovulatoire (environ 2 semaines après le début de la dernière menstruation
3) Luteal (après l'ovulation, quelques jours avant le cycle menstuel)
4) Menstruel]

4) Avez-vous changé vos méthodes contraceptives ou votre marque de contraceptif oral?
1) Oui
2) Non

Si OUI, elle a changé de _____

à _____

5) Y-a-t-il eu des changements dans la fréquence d'infections vaginales depuis notre dernière rencontre?
1) Oui
2) Non

Si OUI, est-ce qu'il y a eu une augmentation ou une diminution du nombre d'infections vaginales que vous avez eu?

a) une augmentation de _____ à _____ par _____

b) une diminution de _____ à _____ par _____

6) Avez-vous déjà été diagnostiquée avec l'un des problèmes gynécologiques suivants depuis notre dernière rencontre?

1) Chlamydia ____
2) Gardnerella vaginalis ____
3) Herpes génital ____
4) Condylomes ____
5) Gonorrhée ____
6) V.I.H. ____
7) Siphyllis ____
8) Trichomoniasis ____
9) Vessie/infections urinaires (quand? _____)
10) Cystites (quand? _____)
11) Maladie inflammatoire pelvienne (quand?_____)
12) Endométriose (quand? _____)
13) Autre (veuillez spécifier: _____)
14) Aucune

13) Avez-vous subit l'une des interventions gynécologiques suivantes depuis notre dernière rencontre?

1) Hystérectomie_____
2) Laparoscopie_____
3) Ovariectomie_____
4) Ligatures des trompes_____
5) Curtage_____
6) Avortement
7) Autre: (veuillez spécifier: _____)
8) Aucune

⇨ If control participant, discontinue questionnaire; if VVS participant, continue to next page.

SECTION D: Femmes ayant la douleur

1) Quels traitements avez-vous suivi pour la VVS depuis notre dernière rencontre?
   1) la chirurgie (e.g., la vestibulectomie, le laser, le curetage)
   2) autres traitements médicaux (e.g., les hormones, l'interferon, les antibiotiques)
   3) les traitements psychologiques (e.g., la psychothérapie, l'hypnose, Kegels, le biofeedback)
   4) la médicine alternative (e.g., acupuncture, la physiothérapie, les vitamines, les diètes, les remèdes homéopathiques,)
   5) des crèmes (e.g., K-Y, Crisco, hydratantes, corticosteroïdes, hormonales, anesthésiques)
   6) des petits changements (e.g., des sous-vêtements de coton, des savons doux, un changement de matelas)
   7) Autre (veuillez spécifier:_____)
      Continuez au #7, N/A jusqu'au #7
   8) aucune traitement subi
      Procedez au #2

2) Si vous avez suivi **aucun traitement**: Avez-vous perçu des changements dans l'intensité de votre douleur avec le temps?
   1) Oui
   2) Non

   Si OUI, y a-t-il eu une a) augmentation ou une b) diminution?

3) S.V.P. évaluez la douleur que vous ressentiez dans le passé sur une échelle de 0 à 10, 0 indiquant aucune douleur et 10 indiquant la douleur la plus intense que vous n'ayez déjà ressentie:

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

4) S.V.P. évaluez la détresse que vous viviez dans le passé sur une échelle de 0 à 10, 0 indiquant aucune détresse et 10 indiquant la pire détresse que vous n'ayez déjà vecue:

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

5) S.V.P. évaluez la douleur que vous ressentez présentement sur une échelle de 0 á 10, 0 indiquant aucune douleur et 10 indiquant la douleur la plus intense que vous n'ayez déjà ressentie:

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

6) S.V.P. évaluez la détresse que vous vivez présentement sur une échelle de 0 à 10, 0 indiquant aucune détresse et 10 indiquant la pire détresse que vous n'ayez déjà vecue:

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

(if **no treatment**, N/A for #7-11, continue to #12)

7) Avez-vous remarqué des changements dans l'intensité de votre douleur dus aux traitements que vous avez suivi depuis notre dernière rencontre?

1) Oui
2) Non

Si OUI, y a-t-il eu une a) augmentation ou une b) diminution?

8) S.V.P. évaluez la douleur que vous ressentiez dans le passé sur une échelle de 0 à 10, 0 indiquant aucune douleur et 10 indiquant la douleur la plus intense que vous n'ayez déjà ressentie:

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

9) S.V.P. évaluez la détresse que vous viviez dans le passé sur une échelle de 0 à 10, 0 indiquant aucune détresse et 10 indiquant la pire détresse que vous n'ayez déjà vecue:

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

10) S.V.P. évaluez la douleur que vous ressentez présentement sur une échelle de 0 á 10, 0 indiquant aucune douleur et 10 indiquant la douleur la plus intense que vous n'ayez déjà ressentie:

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

11) S.V.P. évaluez la détresse que vous vivez présentement sur une échelle de 0 à 10, 0 indiquant aucune détresse et 10 indiquant la pire détresse que vous n'ayez déjà vecue:

0	1	2	3	4	5	6	7	8	9	10
pas alarmante du tout										la plus alarmante

12) Avez-vous remarqué des changements de le déroulement de votre douleur?
   1) Oui
   2) Non

13) Quand est-ce que la douleur a débuté?
   1) avant que le pénis ne touche l'entrée du vagin
   2) quand le pénis commence à entrer dans le vagin
   3) quand le pénis a complètement pénétré le vagin et qu'il y a du va-et-vient
   4) aprés avoir eu des relations sexuelles (durée: _____)
   5) autre (veuillez spécifier_____)
   Et maintenant? _____ N/A

14) Combien de temps persiste la douleur?
   1) seulement durant l'entrée du pénis
   2) seulement durant le mouvement de va-et-vient du pénis
   3) seulement un peu de temps après la sortie du pénis
   4) durant l'entrée du pénis et après sa sortie
   5) durant l'entrée du pénis et durant le mouvement de va-et-vient
   6) durant le mouvement de va-et-vient du pénis et quelque temps après sa sortie
   7) à l'entrée du pénis, durant son mouvement de va-et-vient, et après sa sortie
   8) ce n'est jamais pareil; il n'y a pas de "pattern"
   Et maintenant? _____N/A

15) Où ressentiez-vous la douleur durant vos relations sexuelles?
   1) à l'entrée du vagin
   2) partout sur la vulve
   3) à l'intérieur du vagin
   4 dans la région pelvienne ou abdominale
   Et maintenant? _____N/A

16) Est-ce que vous décriveriez la douleur ressentie lors du Q-tip test et lors de la pénétration pénienne comme un "choc électrique?"

1) Oui
2) Non

⇨ arrêtez le questionnaire

Structured Interview

Functional Magnetic Resonance Imaging Study

Initial Interview

Subject Number _____

Group _____

Interviewer _____

Date of Interview _____

PART A: Socio-Demographic Information

1) Date of birth _____/_____/_____ Age: _____
mo day year

2) Place of birth

1) Canada	2) United States	3) Eastern Europe
4) Western Europe	5) Africa	6) Asia
7) Australia	8) Middle East	9) Latin/South America
10) Caribbean		

3) What culture do you see yourself as most associated with?

1) Canadian	2) Québecoise	3) American
4) Irish/Scottish/Welsh	5) Native American	6) Greek/Italian Cdn
7) Eastern European	8) Western European	9) African
10) Asian	11) Australian	12) Middle Eastern
13) Latin/South American	14) Caribbean	

4) What is your mother tongue?
1) English
2) French
3) Other (please specify:_____)

5) In what religion were you brought up?
1) Catholic 2) Protestant 3) Jewish
4) None 5) Other (please specify:_____)

6) How many years of schooling do you have? _____

7) What is the approximate total annual income of your household?

1) $ 0 - $ 9,999	4) $30,000 - $39,999	7) $60,000 and over
2) $10,000 - $19,999	5) $40,000 - $49,999	
3) $20,000 - $29,999	6) $50,000 - $59,999	

8) Handedness? Right _____ Left _____

9) Approximate Height _____ Weight _____

PART B: Relationship History

1) Which of the following best describes your current situation?

1) no regular partner at the moment
2) dating one partner regularly
3) living with a partner
4) married

2) How long have you been in this situation? _____years_____months

3) Have you *ever* had full penile-vaginal intercourse? 1) YES 2) NO
⇨ if *yes*, continue; if *no*, discontinue questionnaire

4) How old were you when you had intercourse for the first time? _____ years old

5) Do you remember it as being painful? 1) YES 2) NO (N/A for #6)
⇨ if *no,* go to number 7

6) On a **scale** of 0 to 10, please rate the intensity of the pain you experienced during your first intercourse. _____ N/A

7) Do you remember it as being unpleasant? 1) YES 2) NO (N/A for #8)

8) On a **scale** of 0 to 10, please rate the degree of unpleasantness you experienced during your first intercourse. _____ N/A

9) What is the total number of partners you have had intercourse with (including one-night stands)? _____

10) Have you ever experienced childbirth? 1) YES 2) NO

If YES, please specify number of children _____

If YES, are you currently breast-feeding? 1) YES 2) NO

11) Is there any possibility that you might currently be pregnant? 1) YES 2) NO

PART C: Gynecological and Medical History

1) Do you menstruate regularly (approximately once a month)? 1) YES 2) NO

If no, why not? _____

2) What was the start date of your last menstrual period? _____/_____/_____
mo day year

[coding: 1) Follicular (few days after menstruation)
2) Ovulatory (about 2 weeks after start of last menstruation)
3) Luteal (after ovulation, few days before menstrual onset)
4) Menstrual]

3) On a scale of 0 to 10, please rate the intensity of the pain you experience during your menstrual periods. _____ N/A

4) On a scale of 0 to 10, please rate the degree of unpleasantness you experience during your menstrual periods. _____ N/A

5) If has **current partner**: Do you and/or your partner use any method(s) of contraception?
1) YES 2) NO

If **no current partner**: Did you and/or your past partners use any method(s) of contraception?
1) YES 2) NO

If **yes** to either question, which one(s)? _____
If using the pill, which brand? _____
How long have you been using the pill? _____

6) How many yeast infections have you had? _____
⇨ if 0, go to number 9, and N/A for numbers 7 and 8.

7) Have you suffered from repeated yeast infections? 1) YES 2) NO 3) DK 4) N/A
⇨ If yes, since what age? _____

8) How were the yeast infections diagnosed? N/A
1) clinical plus positive culture: Number of times _____
2) clinical only: Number of times _____
3) self-diagnosed: Number of times _____

9) What gynecological problems have you had?

1) Chlamydia ____ 2) Gardnerella vaginalis ____ 3) Genital herpes ____
4) Genital warts ____ 5) Gonorrhea ____ 6) H.I.V. ____
7) Syphilis ____ 8) Trichomoniasis ____ 9) Bladder/urinary infections ____
10) Interstitial cystitis ____ 11) P.I.D. ____ 12) Endometriosis ____
13) Other (please specify: _____) 14) None

10) What kind of gynecological interventions have you had?

1) Hysterectomy ____ 2) Laparoscopy ____ 3) Ovariectomy ____
4) Tubal ligation ____ 5) C & T ____ 6) Abortion ____
7) Other (please specify:_____) 8) None

11) Have you ever been diagnosed with any chronic pain condition? 1) YES 2) NO

If yes, what condition(s)? _____

12) Are you currently taking any medications? 1) YES 2) NO

If yes, why? _____
For how long? _____

13) Are you currently taking any analgesics? 1) YES 2) NO

If yes, why? _____
For how long? _____

14) Do you have any of the following?

1) Pacemaker ____
2) Aneurysm Clip ____
3) Heart/Vascular Clip ____
4) Prosthetic Valve ____
5) Metal Prosthesis ____
6) Severe claustrophobia ____
7) Possibility of metal fragments in the eye or in any other part of the body _____
8) Cardiovascular or neurological disease _____
9) Implants _____

➜ Do you presently experience, or have you ever experienced, recurrent and persistent pain during intercourse?

⇨ if *no*, proceed to **PART D**
⇨ if *yes*, ask whether she has experienced intercourse pain in the past 6 months
⇨ if *yes*, proceed to **PART E** and **PART F**
⇨ if *no*, proceed to **PART E** and **PART G**

PART D: No pain during intercourse

1) Over the past 6 months, approximately how many times have you had intercourse?

_____ ⇨ if 0, proceed to number 3, and N/A for #2

2) Typically, what percentage of intercourse occasions have been painful? _____ N/A
⇨ proceed to number 7

3) How long has it been since you last had intercourse? _____ years_____ months

4) What is the reason that you have not had intercourse in the past 6 months?
1) I have no partner at the moment
2) It hurts too much
3) I have no desire
4) I fear pain
5) I am too anxious
6) I don't want penetration
7) my partner has erection problems
8) my partner has no desire
9) my partner is concerned about hurting me
10) Other (please specify:_____)

5) In the past, approximately how many times per month were you having intercourse?
_____

6) Typically, what percentage of intercourse occasions was painful? _____

7) Do you *regularly* (i.e., once a month or more) suffer from any of the following pains?

1) stomach aches	2) menstrual cramps	3) neck pain
4) pain in kidneys	5) sore throat	6) toothaches
7) earaches	8) arthritis (where _____)	9) back pain
10) chest pain	11) muscle pain (where _____)	12) headaches
13) other (specify: _____)		14) None (N/A for 8-10)

8) If more than one pain was chosen in #7, which one is the worst pain? _____
N/A

9) On a scale of 0 to 10, please rate the intensity of this/the worst pain. _____ N/A

10) On a scale of 0 to 10, please rate the degree of unpleasantness you experience during this/the worst pain. _____ N/A
⇨ ***administer the PCS*** with respect to this/other pain, and **discontinue interview**

PART E: Pain with Intercourse History

1) When did you first start experiencing pain with intercourse? _____month _____year

2) How did it start?
   1) with first experience
   2) after repeated yeast infections
   3) after childbirth
   4) for no apparent reason
   5) change of partner
   6) after repeated bladder infections
   7) with onset of menopause
   8) after gynecological surgery (please specify: _____)
   9) life stress (e.g., marital conflict, financial problems; specify: _____)
   10) after an abortion
   11) Other (please specify:_____)

3) Has there ever been a period of one month or 6 intercourse occasions in a row during which you experienced pain-free intercourse?
   1) YES – why? _____
   2) NO 3) DK

4) How many health professionals have you consulted for the intercourse pain? _____

5) What diagnoses and treatments were you given by the health professionals to whom you reported the pain? None given ____
   Please list the name of every diagnosis, medication/treatment you remember receiving and the number of times you took/underwent the prescribed treatment.

Diagnosis	Treatment	Number of times taken
_____	_____	1) <10 2) >10 3) DK
_____	_____	1) <10 2) >10 3) DK

6) Have you ever attempted to treat or alleviate the pain? NO YES If *yes*, how?
   1) Changing aspects of sex life (e.g., position, speed, enhancing arousal)
   2) Creams (e.g., K-Y, Crisco, moisturizers, corticosteroids, hormonal, anesthetics)
   3) Alternative medicine (e.g., vitamins, diets, homeopathic remedies, physio)
   4) Psychological treatments (e.g., psychotherapy, hypnosis, Kegels, biofeedback)
   5) Surgery (e.g., vestibulectomy, laser, D&C)
   6) Other medical treatments (e.g., hormones, interferon, antibiotics)
   7) Small changes (e.g., cotton underwear, mild soaps, changing mattresses)
   8) Other (please specify:_____)

PART F: (All women presently having intercourse)

1) Over the past 6 months, approximately how many times have you attempted intercourse per month? _____

2) Typically, what percentage of intercourse occasions have been painful? ____

3) When does the pain typically start?

1) before the penis touches the vaginal opening; it is always there
2) when the penis starts to enter the vagina
3) when the penis has fully entered and is thrusting
4) after intercourse (how long does it last? _____)
5) Other (please specify:_____)

4) How long does the pain typically last?

1) during penile entry only
2) during penile thrusting only
3) only for a period after penile exit
4) during penile entry and after penile exit
5) during penile entry and during penile thrusting
6) during penile thrusting and for some time after penile exit
7) during penile entry, during penile thrusting, and after penile exit
8) it is never the same: there is no typical pattern

If it lasts after penile exit, please state for how long after the pain is felt.

Time: _____minutes _____hours _____days

5) **Show MPQ diagrams.** Where do you typically feel the pain during intercourse? Is there a specific spot you can show me? If yes, where?

1) at the vaginal opening (diagram 1)
2) everywhere on the vulva (diagram 1)
3) inside the vagina (diagram 2)
4) in the pelvic or abdominal region (diagram 3)

⇨ ***administer the MPQ***

6) If chose only one location, proceed to number 7.

If more than one pain, can you differentiate among these different pains?

1) YES 2) NO 3) DK

⇨ If *yes, or don't know*, continue to #7

⇨ If *no*, proceed to number 15

7) On a scale of 0 to 10, please rate the average intensity of the pain at the *vaginal opening* (past 6 months). _____ N/A

8) On a scale of 0 to 10, please rate the average degree of unpleasantness you experience because of this pain. _____ N/A

9) On a scale of 0 to 10, please rate the average intensity of the pain *everywhere on the vulva* (past 6 months). _____ N/A

10) On a scale of 0 to 10, please rate the average degree of unpleasantness you experience because of this pain. _____ N/A

11) On a scale of 0 to 10, please rate the average intensity of the pain *inside the vagina* (past 6 months). _____ N/A

12) On a scale of 0 to 10, please rate the average degree of unpleasantness you experience because of this pain. _____ N/A

13) On a scale of 0 to 10, please rate the average intensity of the pain in the *pelvic or abdom*inal region (past 6 months). _____ N/A

14) On a scale of 0 to 10, please rate the average degree of unpleasantness you experience because of this pain. _____ N/A

15) On a scale of 0 to 10, please rate the average intensity of pain you experience during intercourse. _____

16) On a scale of 0 to 10, please rate average degree of unpleasantness you experience during intercourse. _____

⇨ ***administer the PCS* for intercourse pain**

17) At which time of your menstrual cycle is the pain with intercourse worst?

1) All the time; no change
2) During menstruation
3) A few days before menstruation
4) A few days after menstruation
5) During ovulation (2 weeks before menstrual onset)
6) There is no typical pattern; it varies from month to month
7) other (please specify: _____)

Continue....

18) Do you *regularly* (i.e., once a month or more) suffer from any of the following pains?

1) stomach aches	2) menstrual cramps	3) neck pain
4) pain in kidneys	5) sore throat	6) toothaches
7) earaches	8) arthritis (where _____)	9) back pain
10) chest pain	11) muscle pain (where _____)	12) headaches
13) other (specify: _____)		14) None (N/A for 8-10)

19) If chose more than one, which one is the worst pain? _____

20) On a scale of 0 to 10, please rate the intensity of this/the worst pain. _____ N/A

21) On a scale of 0 to 10, please rate the degree of unpleasantness you experience during this/the worst pain. _____ N/A

⇨ ***administer the PCS*** with respect to this/other pain, and **discontinue questionnaire**

PART G: (Women not currently having intercourse)

1) How long has it been since you last had intercourse? _____months _____years

2) What is the reason that you have not had intercourse in the past 6 months?
   1) I have no partner at the moment
   2) It hurts too much
   3) I have no desire
   4) I fear pain
   5) I am too anxious
   6) I don't want penetration
   7) my partner has erection problems
   8) my partner has no desire
   9) my partner is concerned about hurting me
   10) Other (please specify:_____)

3) In the past, approximately how many times per month were you attempting intercourse per month? _____

4) Typically, what percentage of intercourse occasions were painful? ____

5) When did the pain typically start?

   1) before the penis touches the vaginal opening; it is always there
   2) when the penis starts to enter the vagina
   3) when the penis has fully entered and is thrusting
   4) after intercourse (how long does it last? _____)
   5) Other (please specify:_____)

6) How long did the pain typically last?
   1) during penile entry only
   2) during penile thrusting only
   3) only for a period after penile exit
   4) during penile entry and after penile exit
   5) during penile entry and during penile thrusting
   6) during penile thrusting and for some time after penile exit
   7) during penile entry, during penile thrusting, and after penile exit
   8) it is never the same: there is no typical pattern

   If it lasted after penile exit, please state for how long after the pain was felt.

   Time: _____minutes _____hours _____days

7) **Show MPQ diagram**. Where did you typically feel the pain during intercourse? Is there a specific spot you can show me? If yes, where?

1) at the vaginal opening (diagram 1)
2) everywhere on the vulva (diagram 1)
3) inside the vagina (diagram 2)
4) in the pelvic or abdominal region (diagram 3)

⇨ ***administer the MPQ***

8) If chose **only one location**, proceed to #10.
If **more than one location**, can you differentiate the different pains indicated in #7?

1) YES 2) NO 3) DK

⇨ If *yes, or don't know*, continue to #9
⇨ If *no*, proceed to number 17

9) On a scale of 0 to 10, please rate the average intensity of the pain at the *vaginal opening*. _____ N/A

10) On a scale of 0 to 10, please rate the average degree of unpleasantness you experienced because of this pain. _____ N/A

11) On a scale of 0 to 10, please rate the average intensity of the pain *everywhere on the vulva*. _____ N/A

12) On a scale of 0 to 10, please rate the average degree of unpleasantness you experienced because of this pain. _____ N/A

13) On a scale of 0 to 10, please rate the average intensity of the pain *inside the vagina*. _____ N/A

14) On a scale of 0 to 10, please rate the average degree of unpleasantness you experienced because of this pain. _____ N/A

15) On a scale of 0 to 10, please rate the average intensity of the pain in the *pelvic or abdom*inal region. _____ N/A

16) On a scale of 0 to 10, please rate the average degree of unpleasantness you experienced because of this pain. _____ N/A

17) On a scale of 0 to 10, please rate the average intensity of pain you experienced during intercourse. _____

18) On a scale of 0 to 10, please rate the average degree of unpleasantness you experienced during intercourse. _____

⇨ ***administer the PCS*** **with respect to intercourse pain**

19) At which time of your menstrual cycle is the pain with intercourse worst?

1) All the time; no change
2) During menstruation
3) A few days before menstruation
4) A few days after menstruation
5) During ovulation (2 weeks before menstrual onset)
6) There is no typical pattern; it varies from month to month
7) other (please specify: _____)

20) Do you *regularly* (i.e., once a month or more) suffer from any of the following pains?

1) stomach aches	2) menstrual cramps	3) neck pain
4) pain in kidneys	5) sore throat	6) toothaches
7) earaches	8) arthritis (where _____)	9) back pain
10) chest pain	11) muscle pain (where _____)	12) headaches
13) other (specify: _____)		14) None

21) On a scale of 0 to 10, please rate the intensity of this/the worst pain. _____ N/A

22) On a scale of 0 to 10, please rate the degree of unpleasantness you experience during this/the worst pain. _____ N/A

⇨ ***administer the PCS*** with respect to this/other pain, and **discontinue questionnaire**

Entrevue Dirigée

Étude D'Imagerie Par Résonance Magnétique (IRM)

Entrevue Initiale

Numéro du sujet_____

Groupe _____

Intervieweur_____

Date de l'entrevue_____

SECTION A: Information Socio-Démographique

1) Date de naissance _____/_____/_____ Âge: _____
mois jour année

2) Lieu de naissance

1) Canada	2) États-Unis	3) Europe de l'Est
4) Europe de l'Ouest	5) Afrique	6) Asie
7) Australie	8) Moyen-Orient	9) Amérique Latine/du Sud
10) Caraïbes		

3) Quelle est la culture à laquelle vous vous sentez le plus étroitement liée?

1) Canadienne	2) Québécoise	3) Américaine
4) Irlandaise/Écossaise/Galloise		5) Autochtone
6) Greco/Italienne	7) Européenne de l'Est	8) Européenne de l'Ouest
9) Africaine	10) Asiatique	11) Australienne
12) Moyen-Orient	13) Latino/Sud-Américaine	14) Caraïbes

4) Quelle est votre langue maternelle?
1) Anglais
2) Français
3) Autre (veuillez spécifier_____)

5) Dans quelle religion avez-vous été élevée?

1) Catholique	2) Protestante	3) Juive
4) Aucune	5) Autre (veuileez spécifier_____)	

6) Combien d'années de scolarité avez-vous? _____

7) Quel est le revenu annuel approximatif de votre ménage?

1) $ 0 - $ 9,999	4) $30,000 - $39,999	7) $60,000 et plus
2) $10,000 - $19,999	5) $40,000 - $49,999	
3) $20,000 - $29,999	6) $50,000 - $59,999	

8) Êtes-vous 1) droitière _____ ou 2) gauchère _____ ?

9) Votre taille _____ et poids _____ approximatifs?

SECTION B: Histoire Relationnelle

1) Lequel des points suivants décrit le mieux votre statut civil actuel?
   1) célibataire non engagée dans une relation
   2) célibataire avec un partenaire régulier
   3) en union de fait
   4) mariée

2) Depuis combien de temps êtes-vous dans la situation encerclée ci-dessus?
   _____années_____mois

3) Avez-vous déjà eu des relations sexuelles avec pénétration? 1) OUI 2) NON
   ⇨ Si *oui*, continuez, si *non*, arrêtez

4) À quel âge avez-vous eu votre première relation sexuelle? _____

5) Était-elle douleureuse? 1) OUI 2) NON (N/P pour #6)
   ⇨ Si *non*, allez au numéro 7

6) S.V.P. évaluez sur une **échelle** de 0 à 10 l'intensité de la douleur ressentie pendant vos premières relations sexuelles. _____ N/P

7) Était-elle désagréable? 1) OUI 2) NON (N/P pour #8)
   ⇨ Si *non*, allez au numéro 9

8) S.V.P. évaluez sur une **échelle** de 0 à 10 le degré d'inconfort ressenti pendant vos premières relations sexuelles. _____ N/P

9) Quel est le nombre total de partenaires avec qui vous avez eu des relations sexuelles (incluant les aventures d'un soir)? _____

10) Avez-vous déjà accouché? 1) OUI 2) NON

   Si OUI, spécifiez le nombre d'enfants _____

   Si OUI, allaitez-vous actuellement? 1) OUI 2) NON

11) Y-a-t'il une possibilité que vous soyez actuellement enceinte? 1) OUI 2) NON

SECTION C: Histoire Gynécologique et Médicale

1) Êtes-vous menstruée régulièrement (≈une fois par mois)? 1) OUI 2) NON
Sinon, pourquoi pas? _____

2) Quelle était la date au début de votre dernière menstruation? _____/_____/_____
mois jr année

[coding: 1) Folliculaire (quelques jours après les menstruations)
2) Ovulatoire (environ 2 semaines après le début de la dernière menstruation
3) Luteal (après l'ovulation, quelques jours avant le cycle menstuel)
4) Menstruel]

3) Évaluez sur une échelle de 0 à 10 l'intensité de la douleur que vous ressentez lors de vos menstruations. _____ N/P

4) Évaluez sur une échelle de 0 à 10 le degré d'inconfort que vous ressentez lors de vos douleurs menstruelles. _____ N/P

5) Si elle a un **partenaire présentement** : Vous ou votre partenaire utilisez-vous des méthodes contraceptives?
1) OUI 2) NON

Si elle n'a **pas de partenaire présentement**: Est-ce que vous ou vos partenaires dans le passé utilisiez des méthodes contraceptives?
1) OUI 2) NON

Si oui, à l'une ou l'autre des questions, lesquelles?_____
Si c'est la pilule, quelle sorte? _____
Ça fait combien de temps que vous utilisez la pilule?_____

6) Combien d'infections vaginales avez-vous eu? _____
⇨ si 0, allez au numéro 9, N/P pour numéros 7 et 8.

7) Avez-vous eu des infections vaginales à répétition? 1) OUI 2) NON 3) SP 4) N/P

8) Comment les infections ont-elles été diagnostiquées? N/P
1) avis du médecin et cultures positives: Combien de temps _____
2) avis du médecin seulement: Combien de temps _____
3) auto-diagnostic: Combien de temps _____

9) Quels types de problème gynécologique avez-vous eu?

1) Chlamydia ____ 2) Gardnerella vaginalis ____ 3) Herpes génital ___
4) Condylomes ____ 5) Gonorrhée ____ 6) V.I.H. ____
7) Siphyllis ____ 8) Trichomoniasis ____ 9) Vessie/infections urinaires ____
10) Cystites ____ 11) Maladie inflammatoire pelvienne 12) Endométriose __
13) Autre (veuillez spécifier: _____) 14) Aucune

10) Quelles interventions gynécologiques avez-vous subies?

1) Hystérectomie____ 2) Laparoscopie____ 3) Ovariectomie____
4) Ligatures des trompes____ 5) Curtage_____ 6) Avortement ____
7) Autre: (veuillez spécifier: _____) 8) Aucune

11) Êtes-vous atteintes de douleur chronique? 1) OUI 2) NON
Si OUI, quelle(s) conditions? _____

12) Quels médicaments prenez-vous actuellement? 1)OUI 2) NON
Si OUI, pourquoi? _____
À l'intérieur de quelle année? _____

13) Est-ce que vous prenez des anti-douleurs? 1) OUI 2) NON
Si OUI, pourquoi? _____
À l'intérieur de quelle année? _____

14) Est-ce que vous avez:

1) Stimulateur cardiaque (pacemaker) ____
2) "Clip" d'anévrisme ____
3) "Clip" cardio-vasculaire ____
4) Valve cardiaque artificielle ____
5) Prothèse métallique ____
6) Claustrophobie sévère ____
7) Possibilité de fragments métalliques dans les yeux ou toutes autres parties du corps ___
8) Désordre cardio-vasculaire ou neurologique ____
9) Implants ____

➜ Ressentez-vous ou avez-vous déjà ressenti une douleur passagère ou chronique pendant les relations sexuelles?

⇨ si *non*, continuez à la **PARTIE D**
⇨ si *oui*, durant les derniers 6 mois?
⇨ si *oui*, allez à la **PARTIE E** et **F**
⇨ si *non*, allez allez à la **PARTIE E** et **G**

SECTION D: Aucune douleur pendant les relations sexuelles

1) Durant les derniers 6 mois, combien de relations sexuelles avez-vous eues environ?
_____ ⇨ si 0, continuez au numéro 3, N/P pour #2

2) En moyenne, quel est le pourcentage de vos relations sexuelles qui sont douloureuses?
_____ N/P ⇨ continuez au numéro 7

3) Ça fait combien de temps que vous avez eu des relations sexuelles? __mois ___années

4) Quelle est la raison de cette abstinence pendant les derniers 6 mois?
1) Je n'ai pas de partenaire présentement
2) Ça me fait trop mal
3) Je n'ai aucun désir
4) Je crains la douleur
5) Je suis trop inquiète
6) Je ne veux aucune pénétration
7) Mon conjoint a un problème d'érection
8) Mon conjoint n'a aucun désir
9) Mon conjoint ne veut pas me faire mal
10) autre (veuillez spécifier:_____)

5) Auparavant, combien de fois par mois aviez-vous des relations sexuelles? _____

6) Environ quel pourcentage de vos relations sexuelles étaient douleureuses? _____

7) Souffrez-vous *régulièrement* (une fois par mois ou plus) des douleurs suivantes?

1) Maux de ventre	2) Douleurs menstruelles	3) Mal de cou
4) Mal de reins	5) Mal de gorge	6) Mal de dents
7) Mal d'oreilles	8) Douleurs arthritiques	9) Mal de dos
10) Mal d'estomac	11) Douleurs musculaires	12) Mal de tête
13) Autre (veuillez spécifier_____)		14) Aucune (N/P pour # 8-10)

8) Si plus d'une douleur a été choisie au #7, quel douleur considérez-vous comme étant la pire? _____

9) Sur une échelle de 0 à 10, évaluez l'intensité de cette douleur. ____ N/P

10) Sur une échelle de 0 à 10, évaluez le degré d'inconfort ressenti pendant cette douleur.
____ N/P

⇨ ***administrez la PCS*** en rapport avec cette douleur, et **arrêtez le questionnaire**

SECTION E: Histoire de la Douleur

1) Quand avez-vous commencé à ressentir des douleurs lors de vos relations sexuelles?
_____mois _____année

2) Comment cela a-t-il commencé? (Cochez tout ce qui s'applique)
1) avec ma première relation sexuelle
2) après des infections vaginales répétées
3) après avoir accouché
4) sans raison apparente
5) quand j'ai changé de partenaire
6) après des infections urinaires répétées
7) avec l'arrivé de ma ménopause
8) après une chirurgie gynécologique
9) après un stress important (e.g., conflit conjugal, problèmes financiers, etc)
10) après un avortement
11) autre _____

3) Y-a-t-il eu une période de 1 mois où vous avez eu six relations sexuelles en ligne qui n'ont pas été douloureuses?
1) OUI – pourquoi?_____
2) NON 3) S/P

4) Combien de professionnels de la santé avez-vous consultés pour votre douleur? _____

5) Quels diagnostics et quels traitements vous ont été donnés par les professionnels de la santé à qui vous avez parlé de votre douleur? Aucun reçu _____

Veuillez dresser la liste de tous les diagnostics et médicaments/traitements dont vous vous souvenez ainsi que le nombre de fois que vous avez pris/subi le traitemente prescrit.

Diagnostic	Traitement	Nombre de fois reçu
_____	_____	1) <10 2) >10 3) SP
_____	_____	1) <10 2) >10 3) SP

6) Avez-vous déjà essayé de traiter ou de soulager la douleur par vous même?
1) OUI 2) NON

Si *oui*, comment?
1) En changeant mon style de vie sexuelle (e.g., position, vitesse, films érotiques)
2) Des crèmes (e.g., K-Y, Crisco, hydratantes, corticosteroïdes, hormonales, anesthésiques)
3) La médicine alternative (e.g., les vitamines, les diètes, les remèdes homéopathiques, la physiothérapie)
4) Les traitements psychologiques (e.g., la psychothérapie, l'hypnose, Kegels, le biofeedback)
5) La chirurgie (e.g., la vestibulectomie, le laser, le curetage)
6) Autres traitements médicaux (e.g., les hormones, l'interferon, les antibiotiques)
7) Des petits changements (e.g., des sous-vêtements de coton, des savons doux, un changement de matelas)
8) Autres (veuillez spécifier:_____)

SECTION F: (Pour les femmes ayant présentement des relations sexuelles)

1) Durant les derniers 6 mois, environ combien de fois par mois avez-vous essayé d'avoir des relations sexuelles?_____

2) Environ quel pourcentage des relations sexuelles ont été douleureuses? ____

3) Quand la douleur commence-t-elle habituellement?
   1) avant que le pénis ne touche l'entrée du vagin
   2) quand le pénis commence à entrer dans le vagin
   3) quand le pénis a complètement pénétré le vagin et qu'il y a du va-et-vient
   4) aprés avoir eu des relations sexuelles (durée: _____)
   5) autre (veuillez spécifier_____)

4) Une fois la douleur apparue, durant quelles étapes de la relation sexuelle la ressentez-vous?
   1) seulement durant l'entrée du pénis
   2) seulement durant le mouvement de va-et-vient du pénis
   3) seulement un peu de temps après la sortie du pénis
   4) durant l'entrée du pénis et après sa sortie
   5) durant l'entrée du pénis et durant le mouvement de va-et-vient
   6) durant le mouvement de va-et-vient du pénis et quelque temps après sa sortie
   7) à l'entrée du pénis, durant son mouvement de va-et-vient, et après sa sortie
   8) ce n'est jamais pareil; il n'y a pas de "pattern"

S'il y a lieu, indiquez pour combien de temps la douleur persiste après le retrait du pénis.
   Durée:_____minutes_____heures _____ jours

5) **Montrez le diagramme du MPQ.** À quelle endroit de la région génitale ressentez-vous habituellement la douleur lors des relations sexuelles? Pouvez-vous m'indiquer un endroit précis? Si oui, où?

1) à l'entrée du vagin	(diagramme 1)
2) partout sur la vulve	(diagramme 1)
3) à l'intérieur du vagin	(diagramme 2)
4 dans la région pelvienne ou abdominale	(diagramme 3)

   ⇨ ***administrez le MPQ***

6) Si seulement un endroit a été choisie, procédez au 7.

Si plus d'un endroit fut choisie : Pouvez-vous différencier entre ces différentes douleurs?
   1) OUI 2) NON 3) SP
   ⇨ Si *oui*, ou *ne sais pas*, allez à la question #7
   ⇨ Si *non*, allez à la question #15

7) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *à l'entrée du vagin* (dernier 6 mois). _____ N/P

8) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____ N/P

9) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *partout sur la vulve* (dernier 6 mois). _____ N/P

10) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____ N/P

11) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *à l'intérieur du vagin* (dernier 6 mois). _____ N/P

12) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____ N/P

13) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur dans *la région abdominale* (dernier 6 mois). _____ N/P

14) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____ N/P

15) Évaluez sur une échelle de 0 à 10 l'intensité de la douleur que vous ressentez lors des relations sexuelles (dernier 6 mois). _____

16) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____

⇨ ***administrez le PCS* pour la douleur pendant les relations sexuelles**

17) À quelle période de votre cycle menstruel la douleur lors de la pénétration est-elle la pire?

1) C'est toujours pareil; elle ne varie pas
2) Durant la menstruation
3) Quelques jours avant la menstruation
4) Quelques jours après la menstruation
5) Durant l'ovulation (2 semaines avant le commencement de la menstruation)
6) Ce n'est jamais pareil de mois en mois; il n'y a pas de "pattern"

Continuez...

18) Souffrez-vous *régulièrement* (une fois par mois ou plus) des douleurs suivantes?

1) Maux de ventre	2) Douleurs menstruelles	3) Mal de cou
4) Mal de reins	5) Mal de gorge	6) Mal de dents
7) Mal d'oreilles	8) Douleurs arthritiques	9) Mal de dos
10) Mal d'estomac	11) Douleurs musculaires	12) Mal de tête
14) Aucune		

19) Quelle douleur considérez-vous comme étant la pire?_____ N/P

20) S.V.P. Évaluez le niveau d'intensité de la douleur que vous considéré comme la pire: ____ N/P

21) S.V.P. Évaluez le degré d'inconfort ressenti lors de cette douleur. _____ N/P

⇨ ***administrez la PCS*** selon cette douleur, et **arrêtez le questionnaire**

SECTION G: (Pour les femmes n'ayant pas de relations sexuelles)

1) Combien de temps cela fait-il que vous n'avez pas eu de relations sexuelles?
_____ mois _____ années

2) Quelle est la raison pour laquelle vous n'avez pas eu de relations sexuelles dans les derniers 6 mois?

1) Je n'ai pas de partenaire présentement
2) Ça me fait trop mal
3) Je n'ai aucun désir
4) Je crains la douleur
5) Je suis trop inquiète
6) Je ne veux aucune pénétration
7) Mon conjoint a un problème d'érection
8) Mon conjoint n'a aucun désir
9) Mon conjoint ne veut pas me faire mal
10) Autres (veuillez spécifier:_____)

3) Dans le passé, environ combien de fois par mois avez-vous essayé d'avoir des relations sexuelles? _____

4) Environ quel pourcentage des relations sexuelles étaient douloureues? _____

5) Quand la douleur commence-t-elle habituellement?

1) avant que le pénis ne touche l'entrée du vagin
2) quand le pénis commence à entrer dans le vagin
3) quand le pénis a complètement pénétré le vagin et qu'il y a du va-et-vient
4) après avoir eu des relations sexuelles (durée: _____)
6) Autres (veuillez spécifier_____)

6) Une fois la douleur apparue, durant quelles étapes de la relation sexuelle la ressentiez-vous?

1) seulement durant l'entrée du pénis
2) seulement durant le mouvement de va-et-vient du pénis
3) seulement un peu de temps après la sortie du pénis
4) durant l'entrée du pénis et après sa sortie
5) durant l'entrée du pénis et durant le mouvement de va-et-vient
6) durant le mouvement de va-et-vient du pénis et quelque temps après sa sortie
7) à l'entrée du pénis, durant son mouvement de va-et-vient, et après sa sortie
8) ce n'est jamais pareil; il n'y a pas de "pattern"

S'il y a lieu, indiquez pour combien de temps la douleur persistait après le retrait du pénis.

Durée:_____minutes_____heures _____ jours

7) **Montrez le digramme du MPQ.** À quelle endroit de la région génitale ressentiez-vous habituellement la douleur lors des relations sexuelles? Pouvez-vous m'indiquer un endroit précis? Si oui, où?

1) à l'entrée du vagin (diagramme 1)
2) partout sur la vulve (diagramme 1)
3) à l'intérieur du vagin (diagramme 2)
4) dans la région pelvienne ou abdominale (diagramme 3)

⇨ ***administrez la MPQ***

Si seulement un endroit choisi, #9.

Si plusieurs endrits choisi: Pouvez-vous différencier ces douleurs?

1) OUI 2) NON 3) SP

⇨ Si *oui*, ou *ne sais pas*, continuez

⇨ Si *non*, allez à la question #17

9) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *à l'entrée du vagin.* _____ N/P

10) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____ N/P

11) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *partout sur la vulve.* _____ N/P

12) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____ N/P

13) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur *à l'intérieur du vagin.* _____ N/P

14) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____ N/P

15) Évaluez sur une échelle de 0 à 10 l'intensité moyenne de votre douleur dans *la région abdominale.* _____ N/P

16) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____ N/P

17) Évaluez sur une échelle de 0 à 10 l'intensité de la douleur que vous ressentiez lors des relations sexuelles. _____

18) Évaluez sur une échelle de 0 à 10 le degré moyen d'inconfort ressenti à cause de la douleur. _____

⇨ ***administrez la PCS***

19) À quelle période de votre cycle menstruel la douleur lors de la pénétration est-elle la pire?

1) C'est toujours pareil; elle ne varie pas
2) Durant la menstruation
3) Quelques jours avant la menstruation
4) Quelques jours après la menstruation
5) Durant l'ovulation (2 semaines avant le commencement de la menstruation)
6) Ce n'est jamais pareil de mois en mois; il n'y a pas de "pattern"

20) Souffrez-vous *régulièrement* (une fois par mois ou plus) des douleurs suivantes?

1) Maux de ventre	2) Douleurs menstruelles	3) Mal de cou
4) Mal de reins	5) Mal de gorge	6) Mal de dents
7) Mal d'oreilles	8) Douleurs arthritiques	9) Mal de dos
10) Mal d'estomac	11) Douleurs musculaires	12) Mal de tête
13) Autre (veuillez spécifier_____)		14) Aucune

21) Si plus d'une douleur a été choisie, quelle douleur considérez-vous comme étant la pire?_____

22) Sur une échelle de 0 à 10, évaluez le niveau d'intensité de cette douleur. _____
N/P

23) Sur une échelle de 0 à 10, évaluez le degré d'inconfort ressenti lors de cette douleur.
_____ N/P

⇨ ***administrez la PCS*** selon cette douleur, et **arrêtez le questionnaire**

Follow-Up Interview

fMRI Study

Subject Number _____

Group _____

Interviewer _____

Date of Interview _____

Follow-Up Interview

1) What was the start date of your last menstrual period?

_____/_____/_____
mo day year

2) Is there any possibility that you might currently be pregnant? No Yes*

3) What treatments have you undergone for your VVS pain since we last met?

None ____

1) Small changes (e.g., cotton underwear, mild soaps, changing mattresses)
2) Creams (e.g., K-Y, Crisco, moisturizers, corticosteroids, hormonal, anesthetics)
3) Psychological treatments (e.g., individual/group psychotherapy, Kegels, biofeedback)
4) Alternative medicine (e.g., acupuncture, physiotherapy, vitamins, diets, homeopathic remedies)
5) Surgery (e.g., vestibulectomy, laser, D&C)
6) Other medical treatments (e.g., hormones, interferon, antibiotics)
7) Other _____

Have you noticed any change in the intensity of your pain due to treatment(s)?
No Yes –> A

A) Has there been an a) increase ____ or a b) decrease ____?

Please rate the intensity of the pain you experienced in the past _____
Please rate the unpleasantness of that pain _____
Please rate the intensity of the pain you currently experience _____
Please rate the unpleasantness of your current pain _____

4) Have there been any changes in any of the following areas of your life since we last met?

A) Your relationship status?	No	Yes –> #5
B) Your menstrual cycle?	No	Yes –> #6
C) Your contraception use status?	No	Yes –> #7
D) Yeast infection frequency?	No	Yes –> #8
E) Your gynecological health (e.g., STDs, surgery)?	No	Yes –> #9
F) Intercourse pain intensity or pattern?	No	Yes –> #10
G) Your general medical health (e.g., surgery, pain disorders)/psychiatric status/medication status?	No	Yes –> #11

5) How has you relationship status changed?

From _____ to _____

How long have you been in this situation? _____weeks _____months

6) In what way has your menstrual cycle changed?

From _____ to _____

Why? _____

7) In what way has your contraception use changed? Have you changed your method(s) of contraception or brand of oral contraceptive?

From _____ to _____

8) Has there been an increase or a decrease in the number of yeast infections you have had?

1) Increased from _____ per _____ to _____ per _____

2) Decreased from _____ per _____ to _____ per _____

9) Have you been diagnosed with a gynecological condition? No Yes -> A
Have you had any gynecological surgery/interventions? No Yes -> B

A)What gynecological conditions have you been diagnosed with?

1) Chlamydia ____ 2) Gardnerella vaginalis ____
3) Genital herpes ____ 4) Genital warts ____
5) Gonorrhea ____ 6) H.I.V. ____
7) Syphilis ____ 8) Trichomoniasis ____
9) Bladder/urinary infections ____ 10) Interstitial cystitis ____
11) Pelvic inflammatory disease ____ 12) Endometriosis ____
13) Other _____

B) What gynecological interventions have you had?

1) Hysterectomy ____ 2) Laparoscopy ____
3) Ovariectomy ____ 4) Tubal ligation ____
5) C & T ____ 6) Abortion ____
7) Other _____

10) Has there been a change in the intensity of your intercourse pain?No Yes -> A
Have you noticed any change in the pattern or quality of the pain?No Yes -> B

A) Has there been an a) increase ____ or a b) decrease ____?
Please rate the intensity of the pain you experienced in the past _____
Please rate the unpleasantness of that pain _____
Please rate the intensity of the pain you currently experience _____
Please rate the unpleasantness of your current pain _____

Why do you think this happened? _____

B) How has the pattern of the pain ____ and/or pain quality ____ changed?

From _____

to _____

11) What changes have you experienced in terms of your general medical health?

_____

Have you been diagnosed with a psychiatric disorder since our last meeting? No Yes

Which one(s)? _____

What medications are you currently taking because of this/these problem/s?

_____

-> Administer our pain questionnaire (attached)

1. How much bodily pain have you had during the past 4 weeks?

1) None ____
2) Very mild ____
3) Mild ____
4) Moderate ____
5) Severe ____
6) Very severe ____

2. During the past 4 weeks, how much did bodily pain interfere with your work, including both work outside the home and housework?

1) Not at all ____
2) A little bit ____
3) Moderately ____
4) Quite a bit ____
5) Extremely ____

3. Do you *regularly* (i.e., once a month or more) suffer from pain/discomfort in any of the following body sites?

→ for each "yes" response, ask: a) **How serious of a problem is this for you?** (0 = not at all serious, 5 = moderately serious, 10 = extremely serious)
→ and **How much does this pain/discomfort interfere with your usual activities?** (0 = not at all, 5 = moderately, 10 = totally)

Body Area (indicate if yes)	**Seriousness (0 – 10)**	**Interference (0 – 10)**
Head		
Face (jaw, eyes, ears, etc)		
Mouth (teeth, gums, etc)		
Neck		
Throat		
Back		
Arms		
Hands		
Chest		
Breast		
Stomach/abdomen		
Pelvic area		
Bladder		
Kidney		
Ovary		
Uterus		
Gall bladder		
Rectum		
Legs		

Feet		
Joints (specify_____)		
Skin (specify_____)		
Muscles (specify_____)		
Other (specify_____)		

4. Have you ever experienced or been diagnosed with any of the following problems, which can cause pain or discomfort?

→ for each "yes" response, ask: a) **How serious of a problem is this for you?** (0 = not at all serious, 5 = moderately serious, 10 = extremely serious)

→ and **How much does this pain/discomfort interfere with your usual activities?** (0 = not at all, 5 = moderately, 10 = totally)

Conditions (indicate if yes)	**Seriousness (0 – 10)**	**Interference (0 – 10)**
Headaches/migraines		
Menstrual cramps		
Ovulatory pain		
Endometriosis		
Cystitis		
Yeast infections		
Vaginal infections		
Urinary/bladder infections		
Other viral/bacterial infections		
Sexually transmitted diseases		
Pre-menstrual syndrome		
Fibromyalgia		
Chronic fatigue syndrome		
Arthritis		
Angina		
Osteoporosis		
Burns		
Scars		
Muscle spasms/pain		
Neuralgia		
Colitis/Crohn's disease/IBS		
Hemorrhoids		
Constipation		
Indigestion		
Other (specify_____)		

Deuxième Entrevue

Étude D'IRM

Numéro du sujet_____

Groupe _____

Intervieweur_____

Date de l'entrevue_____

Deuxième Entrevue

1) Quelle était la date au début de votre dernière menstruation?

_____/_____/_____
mois jr année

2) Y-a-t'il une possibilité que vous soyez actuellement enceinte? Non Oui*

3) Quels traitements avez-vous suivi pour la SVV depuis notre dernière rencontre?
Aucune ____

1) Des petits changements (e.g., des sous-vêtements de coton, des savons doux, un changement de matelas)
2) Des crèmes (e.g., K-Y, Crisco, hydratantes, corticosteroïdes, hormonales, anesthésiques)
3) Les traitements psychologiques (e.g., la psychothérapie, l'hypnose, Kegels, le biofeedback)
4) La médicine alternative (e.g., acupuncture, la physiothérapie, les vitamines, les diètes, les remèdes homéopathiques,)
5) La chirurgie (e.g., la vestibulectomie, le laser, le curetage)
6) Autres traitements médicaux (e.g., les hormones, l'interferon, les antibiotiques)
7) Autre _____

Avez-vous remarqué des changements dans l'intensité de votre douleur dus aux traitements?

Non Oui -> A

A) Y a-t-il eu une a) augmentation ____ ou une b) diminution ____?

Évaluez l'intensité de la douleur que vous ressentiez dans le passé _____
Évaluez le degré d'inconfort que vous ressentiez dans le passé _____
Évaluez l'intensité de la douleur que vous ressentez présentement _____
Évaluez le degré d'inconfort que vous ressentez présentement _____

4) Depuis notre dernière rencontre, y a-t-il eu quelconques changements dans un des domaines de votre vie mentionnés ci-dessous:

A) Votre statut civil ou votre situation de couple?	Non	Oui -> #5
B) Votre cycle menstruel?	Non	Oui -> #6
C) Votre emploi et vos formes de méthodes contraceptives?	Non	Oui -> #7
D) La fréquence de vos infections vaginales?	Non	Oui -> #8
E) Votre santé gynécologique (ex., MTS, chirurgie)?	Non	Oui -> #9
F) Votre douleur lors des relations sexuelles?	Non	Oui -> #10
G) Votre santé médicale générale (ex., chirurgie, désordre de douleur)/ votre statut psychiatrique/ vos médicaments?	Non	Oui -> #11

5) Comment est-ce que votre statut civil actuel a changé?

De _____ à _____

Depuis combien de temps êtes-vous dans cette situation? ___ semaines ____mois

6) Comment est-ce que votre cycle menstruel a changé?

De _____ à _____

Pourquoi? _____

7) Comment avez-vous changé vos méthodes contraceptives ou votre marque de contraceptif oral?

De _____ à_____

8) Est-ce qu'il y a eu une augmentation ou une diminution du nombre d'infections vaginales que vous avez eu?

1) Une augmentation de _____ à _____ par _____

2) Une diminution de _____ à _____ par _____

9) Avez-vous été diagnostiquée avec une condition gynécologique? Non Oui –> A
Avez-vous subi quelconques interventions ou chirurgie gynécologique?
Non Oui –> B

A) Avec quels problèmes gynécologiques avez-vous été diagnostiquée?

1) Chlamydia ____ 2) Gardnerella vaginalis ____
3) Herpes génital ____ 4) Condylomes ____
5) Gonorrhée ____ 6) V.I.H. ____
7) Siphyllis ____ 8) Trichomoniasis ____
9) Vessie/infections urinaires ____ 10) Cystites ____
11) Maladie inflammatoire pelvienne ____ 12) Endométriose ____
13) Autre _____

B) Avez-vous subit l'une des interventions gynécologiques suivantes?

1) Hystérectomie_____ 2) Laparoscopie_____
3) Ovariectomie_____ 4) Ligatures des trompes_____
5) Curtage_____ 6) Avortement
7) Autre _____

10) Lors des relations sexualles, avez-vous constaté un changement dans l'intensité de la douleur? Non Oui -> A

Avez-vous constaté des changements dans l'aspect et/ou la qualité de votre douleur?
Non Oui -> B

A) Y a-t-il eu une a) augmentation ____ ou une b) diminution ____?

Évaluez l'intensité de la douleur que vous ressentiez dans le passé _____
Évaluez le degré d'inconfort que vous ressentiez dans le passé _____
Évaluez l'intensité de la douleur que vous ressentez présentement _____
Évaluez le degré d'inconfort que vous ressentez présentement _____

Pourquoi croyez-vous que ces changements ont eu lieu?

_____

B) Comment décrieriez-vous les changements dans l'aspect _____ et/ou la qualité _____ de votre douleur?

De _____

à _____

11) Quels changements avez-vous vécu en terme de votre santé médicale générale?

_____

Depuis notre dernière rencontre, avez-vous été diagnostiquée avec une condition psychiatrique? Non Oui

S.V.P. spécifiez lesquelles:_____

Quels médicaments prenez-vous présentement our ce ou ces problèmes?

_____

➔ Administer our pain questionnaire (attached)

1. Quel type de douleur corporelle avez-vous ressenti au cours des 4 dernières semaines?

1) Aucune ____
2) Très lèger ____
3) Lèger ____
4) Modéré ____
5) Sévère ____
6) Très sévère ____

2. Durant les 4 dernières semaines, jusqu'à quel point est-ce que la douleur a interféré avec votre travail ou vos taches à la maison?

1) Pas du tout ____
2) Un peu ____
3) Modérément ____
4) Suffisament ____
5) Extrèmement ____

3. Souffrez-vous *régulièrement* (une fois par mois ou plus) de douleur ou d'inconfort aux endroits suivants?

→ for each "yes" response, ask: a) **Quelle est la sévérité de ce problème pour vous?**
(0 = pas du tout sérieux, 5 = modérément sérieux, 10 = extrêmement sérieux)
→ and **Jusqu'à quel point est-ce que la douleur interfère avec vos activités habituelles?** (0 = pas du tout, 5 = modérément, 10 = complètement)

Site corporelle	Gravité (0 – 10)	Interférence (0 – 10)
Tête		
Visage (mâchoire, yeux, oreilles, etc)		
Bouche (dents, gencives, etc)		
Cou		
Gorge		
Dos		
Bras		
Mains		
Poitrine		
Sein		
Ventre/région abdominale		
Région pelvienne		
Vessie		
Reins		
Ovaires		
Utérus		
Vésicule biliaire		
Rectum		
Jambes		

Pieds		
Articulations (spécifiez_____)		
Peau (spécifiez_____)		
Muscles (spécifiez_____)		
Autre (spécifiez_____)		

4. Avez-vous éprouvé ou avez vous reçu un diagnostique pour un des problèmes suivants qui pourrait causer de la douleur ou de l'inconfort?

→ for each "yes" response, ask: a) **Quelle est la sévérité de ce problème pour vous?**
(0 = pas du tout sérieux, 5 = modérément sérieux, 10 = extrêmement sérieux)
→ and **Jusqu'à quel point est-ce que la douleur interfère avec vos activités habituelles?** (0 = pas du tout, 5 = modérément, 10 = complètement)

Conditions (indiquez si oui)	**Gravité (0 – 10)**	**Interférence (0 – 10)**
Maux de tête/migraines		
Douleurs menstruelles		
Douleur aux ovaires		
Endométriose		
Cystite		
Candida		
Infections vaginales		
Infections de la vessie/ urinaires		
Autres infections virales /bactériennes		
Maladies transmises sexuellement		
Syndrome pre-menstruelle		
Fibromyalgie		
Syndrome de fatigue chronique		
Arthrite		
Angine		
Ostéoporose		
Brûlure		
Cicatrice		
Spasme musculaire / douleur		
Névralgie		
Colite/Crohn's /SII (intestins irrités)		
Hémorroïdes		
Constipation		

Indigestion		
Autres (spécifiez_____)		

Appendix 5 –

McGill Pain Questionnaire

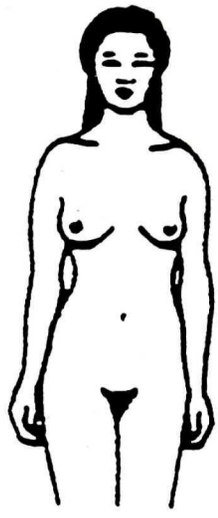
McGill - Melzack Pain Questionnaire

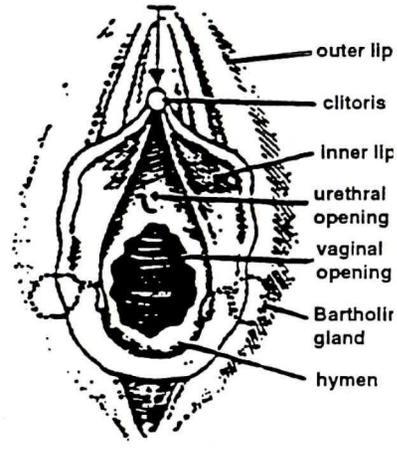
Patient's Name _____ **Date** _____

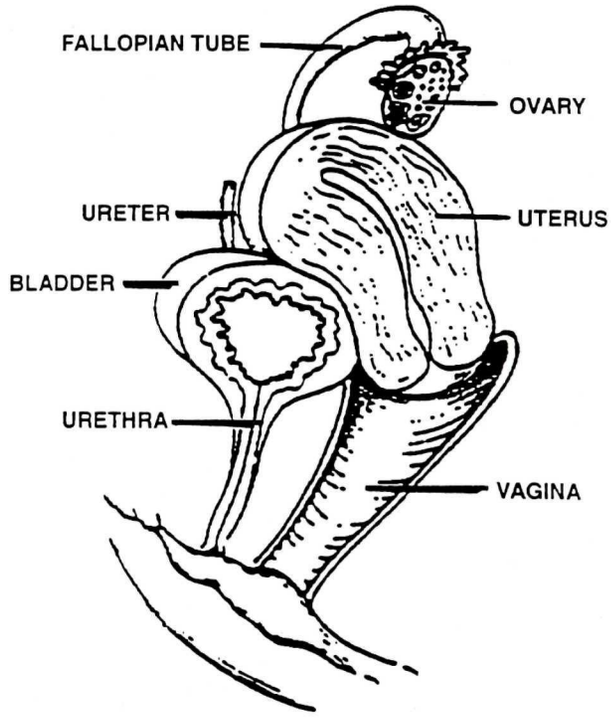
PRI: S _____ A _____ E _____ M(S) _____ M(AE) _____ M(T) _____ PRI(T) _____
(1-10) (11-15) (16) (17-19) (20) (17-20) (1-20)

1 Flickering Quivering Pulsing Throbbing Beating Pounding	11 Tiring Exhausting	
2 Jumping Flashing Shooting	12 Sickening Suffocating	
3 Pricking Boring Drilling Stabbing Lancinating	13 Fearful Frightful Terrifying	
4 Sharp Cutting Lacerating	14 Punishing Gruelling Cruel Vicious Killing	
5 Pinching Pressing Gnawing Cramping Crushing	15 Wretched Blinding	
6 Tugging Pulling Wrenching	16 Annoying Troublesome Miserable Intense Unbearable	
7 Hot Burning Scalding Searing	17 Spreading Radiating Penetrating Piercing	
8 Tingling Itchy Smarting Stinging	18 Tight Numb Drawing Squeezing Tearing	
9 Dull Sore Hurting Aching Heavy	19 Cool Cold Freezing	
10 Tender Taut Rasping Splitting	20 Nagging Nauseating Agonizing Dreadful Torturing	
	PPI 0 No Pain 1 Mild 2 Discomforting 3 Distressing 4 Horrible 5 Excrutiating	

PPI _____ COMMENTS:







Questionnaire Melzack sur la douleur (McGill)

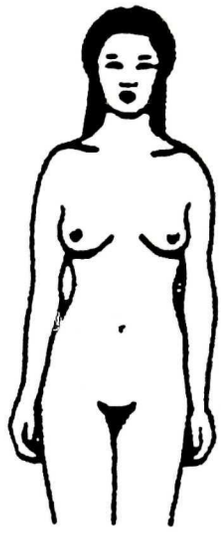
Nom du Patient _____ **Date** _____

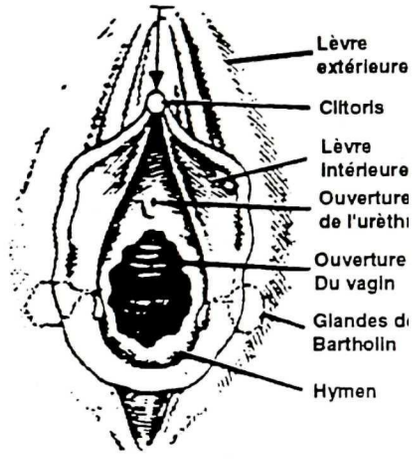
PRI S_____(1-10) A_____(11-15) E_____(16) M (S)_____(17-19) M (AE)_____(20) M (T)_____(17-20) PRI (T)_____(1-20)

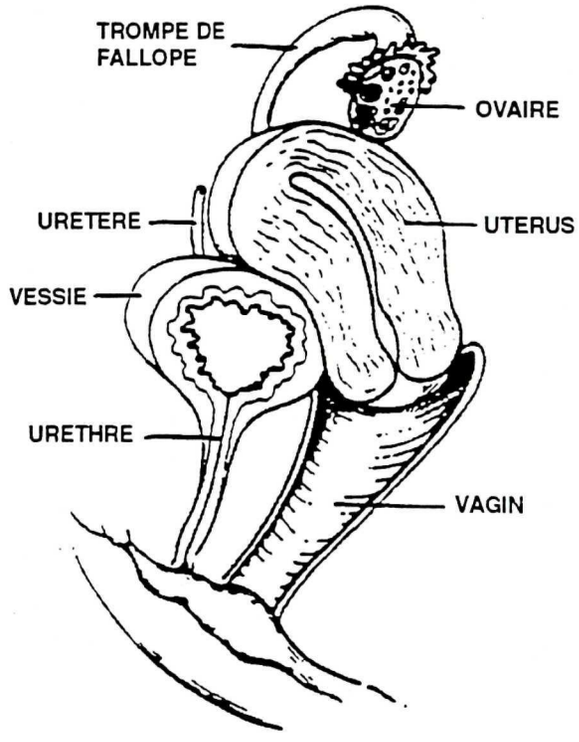
1	Qui tremblotte Qui tremble Qui palpite Qui bat Qui élance Qui martèle	
2	Par secousse Brusque Fulgurante	
3	Qui pique Qui perce Qui pénètre Qui poignarde	
4	Vive Aigüe Déchirante	
5	Qui pince Qui presse Qui ronge Qui écrampe Qui écrase	
6	Qui tiraille Qui tire Qui tord	
7	Chaude Brûlante Bouillante Comme marqué au fer rouge	
8	Qui fourmille Qui démange Cuisante Cingiante	
9	Sourde Douloureuse Drue Pénible Poignante	
10	Sensible Crispée Qui écorche Qui tend	
11	Fatiguante Epuisante	
12	Ecoeurante Etouffante	
13	Epeurante Effrayante Terrifiante	
14	Violente Ereintante Cruelle Tuante Torturante	
15	Déprimante Aveuglante	
16	Agaçante Exasperante Intense Horrible Intolérable	
17	Qui s'étend Qui rayonne Qui rentre Qui transperse	
18	Raide Engourdie Tendue Qui serre Qui arrache	
19	Fraiche Froide Glacée	
20	Enervante Dégoutante Epouvantable Atroce Agonisante	

PPI	
0	Pas de douleur
1	Faible
2	Inconfortable
3	Forte
4	Sévère
5	Insupportable

PPI_____ COMMENTAIRES:







Appendix 6 –

Pain Catastrophizing Scale

PCS

Name:_____ Age:_____ Gender:_____ Date:_____

Everyone experiences painful situations at some point in their lives. Such experiences may include headaches, tooth pain, joint or muscle pain. People are often exposed to situations that may cause pain such as illness, injury, dental procedures or surgery.

We are interested in the types of thoughts and feelings that you have when you are in pain. Listed below are thirteen statements describing different thoughts and feelings that may be associated with pain. Using the following scale, please indicate the degree to which you have these thoughts and feelings when you are experiencing pain.

0 - not at all 1 - to a slight degree 2 - to a moderate degree 3 - to a great degree 4 - all the time

When I'm in pain...

1. ☐ I worry all the time about whether the pain will end.
2. ☐ I feel I can't go on.
3. ☐ It's terrible and I think it's never going to get any better.
4. ☐ It's awful and I feel that it overwhelms me.
5. ☐ I feel I can't stand it anymore.
6. ☐ I become afraid that the pain will get worse.
7. ☐ I keep thinking of other painful events.
8. ☐ I anxiously want the pain to go away.
9. ☐ I can't seem to keep it out of my mind.
10. ☐ I keep thinking about how much it hurts.
11. ☐ I keep thinking about how badly I want the pain to stop.
12. ☐ There's nothing I can do to reduce the intensity of the pain.
13. ☐ I wonder whether something serious may happen.

...Total

RCD

Nom:_____ Age:_____ Sexe:_____ Date:_____

Chacun d'entre nous aura à subir des expériences douloureuses. Cela peut être la douleur associée aux maux de tête, à un mal de dent, ou encore la douleur musculaire ou aux articulations. Il nous arrive souvent d'avoir à subir des expériences douloureuses telles que la maladie, une blessure, un traitement dentaire ou une intervention chirurgicale.

Dans le présent questionnaire, nous vous demandons de décrire le genre de pensées et d'émotions que vous avez quand vous avez de la douleur. Vous trouverez ci-dessous treize énoncés décrivant différentes pensées et émotions qui peuvent être associées à la douleur. Veuillez indiquer à quel point vous avez ces pensées et émotions, selon l'échelle ci-dessous, quand vous avez de la douleur.

0 - pas du tout 1 - quelque peu 2 - de façon modéré 3 - beaucoup 4 - tout le temps

Quand j'ai de la douleur...

1. ☐ j'ai peur qu'il n'y aura pas de fin à la douleur.
2. ☐ je sens que je ne peux pas continuer.
3. ☐ c'est terrible et je pense que ça ne s'améliorera jamais.
4. ☐ c'est affreux et je sens que c'est plus fort que moi.
5. ☐ je sens que je ne peux plus supporter la douleur.
6. ☐ j'ai peur que la douleur s'empire.
7. ☐ je ne fais que penser à d'autres expériences douloureuses.
8. ☐ avec inquiétude, je souhaite que la douleur disparaisse.
9. ☐ je ne peux m'empêcher d'y penser.
10. ☐ je ne fais que penser à quel point ça fait mal.
11. ☐ je ne fais que penser à quel point je veux que la douleur disparaisse.
12. ☐ il n'y a rien que je puisse faire pour réduire l'intensité de la douleur.
13. ☐ je me demande si quelque chose de grave va se produire.

...Total

Appendix 7 –

Standardized Gynecological Examination Form

GYNECOLOGICAL EXAMINATION

Date _____ Date of last intercourse_____

Subject #_____ Gynecologist _____

Gynecologist pain rating

0 1 2 3
no pain mild moderate severe

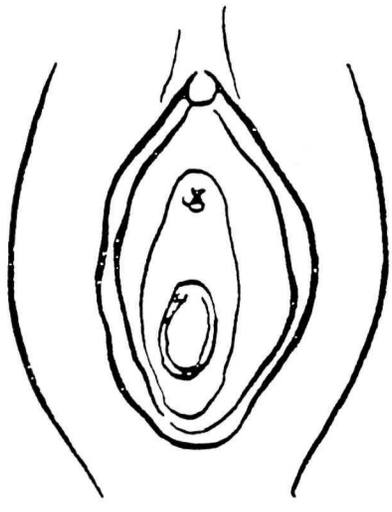
Patient pain rating

0 1 2 3 4 5 6 7 8 9 10
no pain worst pain ever

Erythema rating

0 1 2 3
none mild moderate severe

VULVA



©

PAIN RATING

	RT (gyne)	RT (pt)	LT (gyne)	LT (pt)	MIDLINE (gyne)	MIDLINE (pt)
Labia majora	—	—	—	—	—	—
Labia minora	—	—	—	—	—	—

PAIN RATING

Vestibule (gyne)

___
12

9-12 ___ ___ 12-3

6-9 ___ ___ 3-6

___
6

Vestibule (pt)

___
12

9-12___ ___12-3

6-9___ ___3-6

___
6

REMANANT OF THE HYMEN

Vestibule

___
12

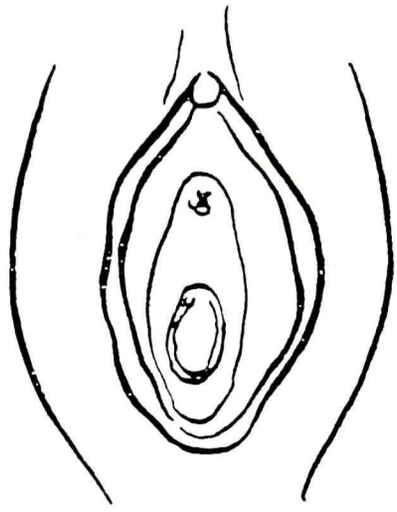
9-12 ___ ___ 12-3

6-9 ___ ___ 3-6

___
6

ERYTHEMA RATING _____

LESIONS/EROSION/SCARRING/MICROPAPILLOMA/CONDYLOMA (code as L/E/S/M/C)



Other significant clinical findings in vulva

_____

_____

_____

VAGINA

PAIN RATING

Anterior vaginal wall (bladder)

(gyne) (pt)

____ ____

	(gyne) (pt)	(gyne) (pt)
Pubococcygeal muscle	Rt ___ ___	Lt ___ ___
Uterosacral ligament	Rt ___ ___	Lt ___ ___

Muscular contractions (outer third, levator ani)

(gyne) (pt)

___ ___ Before examination

___ ___ Touching the vulva

___ ___ Insertion of speculum

___ ___ Insertion of finger

VAGINAL ATROPHY INDEX

	Score		
	1	2	3
Skin elasticity and turgor	Poor	Fair	Excellent
Pubic hair	Sparse	Normal	
Labia	Atrophic, dry	Full	
Introitus	< 1 fingerbreadth	1 fingerbreadth	2 fingerbreadths
Vaginal mucosa	Thin, friable	Smooth	Rugated
Vaginal depth	Shortened	Normal	

Total VAI score ____

PROLAPSED MUCOSA _____

Other significant clinical findings in vagina

UTERUS

PAIN RATING

(gyne) (pt)

___ ___ cervix without motion

___ ___ corpus without motion

___ ___ cervix with motion

___ ___ corpus with motion

Pain at vaginal examination alone ____

Pain at bimanual examination ____

mobile uterus ___

immobile uterus ___

cervical ectropion	yes	no	don't know	
cervical polyp	yes	no	don't know	
prolapsed uterus	yes	no	don't know	1 2 3
fibroids	yes	no	don't know	
anteverted uterus	yes	no	don't know	
intermediate uterus	yes	no	don't know	
retroverted uterus	yes	no	don't know	

Other significant clinical findings in the uterus or cervix

ADNEXAE

felt ___ not felt ___

mobile ___ immobile ___

PAIN RATING

	(gyne) (pt)	(gyne) (pt)
without motion	Rt ___ ___	Lt ___ ___
with motion	Rt ___ ___	Lt ___ ___

Pain at vaginal examination alone ____

Pain at bimanual examination ____

Other significant clinical findings in adnexae

_____

_____

_____

PAIN RELATED DIAGNOSES
(please rank order your diagnoses)

No findings linked to dyspareunia	____
Vulvar vestibulitis syndrome	____
Vaginal atrophy	____
Infection	____
Bladder sensitivity/complications	____
Muscular contraction/tension	____
Prolapsed uterus	____
Scarring from previous incision	____
Vulvar erosion/lesions	____
Fibroids	____
Endometriosis	____
Cysts	____
Tender utero-sacral ligaments	____
Tender uterus	____
Retroverted uterus	____
Polyps	____
Tender ovaries	____
Cervical eversion	____
Cervical inflammation	____
Condyloma	____
Atypical cell changes in PAP	____
Micropapilloma	____
Monolilial vaginitis	____
Squamous metaplasia	____
Congenital anatomical anomaly	____
Candidiasis	
Other (please specify)	____

_____

NON-PAIN RELATED DIAGNOSES

1._____
2._____
3._____
4._____
5._____

Appendix 8 –

Non-Painful Sensations Word Lists

Non-Painful Sensations

1. Bothersome
2. Discomforting
3. Uncomfortable
4. Unpleasant
5. Irritating
6. Distressing
7. Aggravating
8. Disturbing
9. Overwhelming
10. Touchy
11. Sensitive
12. Tender
13. Sore
14. Aching
15. Spreading
16. Radiating
17. Blunt
18. Dull
19. Mild
20. Vivid
21. Strong
22. Intense
23. Warm
24. Singeing
25. Chafing
26. Reddening
27. Swollen
28. Cool
29. Cold
30. Poking
31. Distinct
32. Pointed
33. Precise
34. Nipping
35. Pinching
36. Pressing
37. Puncturing
38. Sharp
39. Prickling
40. Biting
41. Incisive
42. Ticklish
43. Flickering
44. Tingling
45. Stroking
46. Brushing
47. Scratchy
48. Itchy
49. Rubbing
50. Grinding
51. Raspy
52. Rough
53. Raw

Sensations Non-Douleureuses

1. Ennuyeuse
2. Gênante
3. Inconfortable
4. Désagréable
5. Irritante
6. Pénible
7. Agaçante
8. Inquiétante
9. Accablante
10. Touchante
11. Sensible
12. Sensible au toucher
13. Endolorie
14. Douloureuse
15. Diffuse
16. Irradiante
17. Émoussée
18. Insignifiante
19. Légère
20. Vive
21. Forte
22. Intense
23. Tiède
24. Brûlante
25. Irritante
26. Rougissante
27. Enflée
28. Fraîche
29. Froide
30. Enfoncée
31. Nette
32. Pointue
33. Précise
34. Pinçante
35. Piquante
36. Pressante
37. Perforante
38. Coupante
39. Picotante
40. Mordante
41. Incisive
42. Chatouilleuse
43. Vacillante
44. Picotement
45. Caressante
46. Effleurement
47. Qui égratigne
48. Qui démange
49. Frottement
50. Grincement
51. Rugueuse
52. Rude
53. Crue

Appendix 9 –

Painful Sensations Word Lists

Painful Sensations

A. Flickering
B. Quivering
C. Pulsing
D. Throbbing
E. Beating
F. Pounding
G. Jumping
H. Flashing
I. Shooting
J. Pricking
K. Boring
L. Drilling
M. Stabbing
N. Sharp
O. Cutting
P. Lacerating
Q. Pinching
R. Pressing
S. Gnawing
T. Cramping
U. Crushing
V. Tugging
W. Pulling
X. Wrenching
Y. Hot

1-A. Burning
1-B. Scalding
1-C. Searing
1-D. Tingling
1-E. Itchy
1-F. Smarting
1-G. Stinging
1-H. Dull
1-I. Sore
1-J. Hurting
1-K. Aching
1-L. Heavy
1-M. Tender
1-N. Taut
1-O. Rasping
1-P. Splitting
1-Q. Tiring
1-R. Exhausting
1-S. Sickening
1-T. Suffocating
1-U. Fearful
1-V. Frightful
1-W. Terrifying
1-X. Punishing
1-Y. Gruelling
1-Z. Cruel

2-A. Vicious
2-B. Killing
2-C. Wretched
2-D. Blinding
2-E. Annoying
2-F. Troublesome
2-G. Miserable
2-H. Intense
2-I. Unbearable
2-J. Spreading
2-K. Radiating
2-L. Penetrating
2-M. Piercing
2-N. Tight
2-O. Numb
2-P. Drawing
2-Q. Squeezing
2-R. Tearing
2-S. Cool
2-T. Cold
2-U. Freezing
2-V. Nagging
2-W. Nauseating
2-X. Agonizing
2-Y. Dreadful
2-Z. Torturing

Sensations Douleureuses

A. Qui tremblotte
B. Qui tremble
C. Qui palpite
D. Qui bat
E. Qui élance
F. Qui martèle
G. Par secousse
H. Brusque
I. Fulgurante
J. Qui pique
K. Qui perce
L. Qui pénètre
M. Qui poignarde
N. Vive
O. Aigue
P. Déchirante
Q. Qui pince
R. Qui presse
S. Qui ronge
T. Qui écrampe
U. Qui écrase
V. Qui tiraille
W. Qui tire
X. Qui tord
Y. Chaude

1-A. Brûlante
1-B. Bouillante
1-C. Comme marqué au fer rouge
1-D. Qui fourmille
1-E. Qui démange
1-F. Cuisante
1-G. Cinglante
1-H. Sourde
1-I. Douleureuse
1-J. Drue
1-K. Pénible
1-L. Poignante
1-M. Sensible
1-N. Crispée
1-O. Qui écorche
1-P. Qui tend
1-Q. Fatiguante
1-R. Épuisante
1-S. Écoeurante
1-T. Étouffante
1-U. Épeurante
1-V. Effrayante
1-W. Terrifiante
1-X. Violente
1-Y. Éreintante
1-Z. Cruelle

2-A. Tuante
2-B. Torturante
2-C. Déprimante
2-D. Aveuglante
2-E. Agaçante
2-F. Exaspérante
2-G. Intense
2-H. Horrible
2-I. Intolérable
2-J. Qui s'étend
2-K. Qui rayonne
2-L. Qui rentre
2-M. Qui transperse
2-N. Raide
2-O. Engourdie
2-P. Tendue
2-Q. Qui serre
2-R. Qui arrache
2-S. Fraîche
2-T. Froide
2-U. Glacée
2-V. Énervante
2-W. Dégoutante
2-X. Épouvantable
2-Y. Atroce
2-Z. Agonisante

Appendix 10 –

Rating Scales

Non-Painful Sensations

Intensity:

0	1	2	3	4	5	6	7	8	9	10
no sensation at all										strongest sensation ever

Unpleasantness:

0	1	2	3	4	5	6	7	8	9	10
not unpleasant at all										most unpleasant ever

Painful Sensations

Pain:

0	1	2	3	4	5	6	7	8	9	10
no pain at all										worst pain ever felt

Unpleasantness:

0	1	2	3	4	5	6	7	8	9	10
not unpleasant at all										most unpleasant ever

Sensations Non-Douleureuses

Intensité:

0	1	2	3	4	5	6	7	8	9	10
aucune sensation										sensation la plus forte

Degré d'inconfort:

0	1	2	3	4	5	6	7	8	9	10
pas désagréable du tout										la plus désagréable

Sensations Douleureuses

Douleur:

0	1	2	3	4	5	6	7	8	9	10
aucune douleur										douleur la plus intense

Degré d'inconfort:

0	1	2	3	4	5	6	7	8	9	10
pas désagréable du tout										la plus désagréable

Appendix 11 –

Vulvar Vestibulitis Syndrome Information Package

Answers to Some of Your Questions About Vulvar Vestibulitis Syndrome (VVS)

What is Vulvar Vestibulitis Syndrome?

Vulvar Vestibulitis Syndrome (VVS) is one of the most common causes of painful intercourse in women under the age of 40. The exact prevalence of VVS is not known, but approximately 10-15% of pre-menopausal women complain of recurrent pain during intercourse. Women with VVS report experiencing a highly localized, burning and/or cutting pain at the entrance of the vagina (called the vulvar vestibule) during sexual intercourse as well as during other activities that involve applying pressure to the vestibule (e.g., tampon insertion, gynecological exams, bicycle riding). Although the pain of VVS typically disappears after pressure to the vestibule is removed, many women report pain or discomfort after sexual intercourse.

Approximately 50% of women who suffer from VVS have what is called *primary* VVS, indicating that the pain has been present since their first intercourse attempt. The other half has *secondary or acquired* VVS, which develops after a period of pain-free intercourse, and in many cases, after an aggravating factor (e.g., repeated vaginal infections, sexually transmitted diseases). However, little is known about the causes of VVS, and most health professionals agree that it is caused by a combination of factors. A review of the scientific articles published on the topic can be made available to you if you are interested in finding out more about VVS.

VVS is diagnosed with the cotton-swab test, during which a gynecologist applies a cotton-swab to various locations around the vulvar vestibule. This test is usually quite painful for women who suffer from VVS. If you believe that you have VVS, we recommend that you see a gynecologist for this test.

How is VVS Treated?

There is scientific evidence that the following treatments are effective for VVS:

- Pain relief/control therapy in group, couple, or individual format (Sex and Couple Therapy Service, Royal Victoria Hospital)
- Muscle training/physiotherapy assisted by biofeedback
- Surgical removal of the painful area of the vulvar vestibule (vestibulectomy).

It is generally recommended to start treatment with either pain relief/control therapy, physiotherapy, or both combined. Pain therapy and physiotherapy are equally successful, with group therapy receiving greater rates of satisfaction; both treatments complement each other well. Thirty-five to forty percent of women who followed either of these treatments reported a great decrease in their pain or complete pain relief, as reported in a recent treatment outcome study published in the journal PAIN.

If there is no significant improvement with physiotherapy or pain therapy, a vestibulectomy is indicated. This is a relatively minor day procedure carried out under

general anesthesia. Following the operation, women will typically experience some discomfort in the genital region. Neither intercourse nor any other penetrative activity should be attempted for six to eight weeks post-surgery. Seventy percent of women who underwent this surgery reported a great decrease in their pain or complete pain relief as found in the above mentioned treatment outcome study.

Treatments that are effective for other types of pain may also help women with VVS control their pain. However, there is no evidence for their effectiveness in women who suffer from VVS. Nevertheless, some women may benefit from these treatments. They include the following:

- Lubricants (e.g., Liquid K-Y, vegetable shortening) before intercourse
- Topical anaesthetics (such as Xylocaine [a prescription from your doctor is needed] and EMLA [available over the counter]) before intercourse
- Acupuncture
- Hypnosis

You may have come across information about other forms of treatment for VVS, such as vaginal creams, diets, and laser surgery. There is no evidence for their effectiveness, and in fact, some of these treatments may have unintended side effects.

Suggestions as to how to cope with your pain in the short term are listed on the sheet entitled "Helpful Hints for Women with Vulvar Vestibulitis Syndrome" included in this package.

Who to Contact?

Gynecologists:

- Dr. Samir Khalifé (514-933-8877) 3550 chemin Côte des Neiges, Suite 700

Psychologists:

- Sex and Couple Therapy Service, Royal Victoria Hospital, 1025 Pine Avenue West Dr. Sophie Bergeron, Ph.D., Dr. Irv Binik, Ph.D., Ms. Julie Larouche, M.Ps, Ph.D. Candidate, and Ms. Caroline Pukall, Ph.D. Candidate can be contacted through Judi Young at 514-398-6094
- Private practice: Dr. Louise Paré (450-445-5690) 3550 chemin Côte des Neiges, Suite 700; and 620 Boulevard St. Foy, Suite #5, Longueuil, Quebec

Physiotherapists:

- Claudia Brown (514-259-3791) 5700 St. Zotique, Room 205, Montreal East
- Marie-Josée Lord (514-697-1141) 101 Avenue Donegani, Pointe Claire

Further Information

Web site addresses:

- www.vulvarhealth.org
- www.nva.org

Scientific Articles on VVS & Further Questions About VVS

- Please contact Caroline Pukall by phone (514-398-5323) or e-mail (caroline.pukall@mail.mcgill.ca)

Helpful Hints for Women with Vulvar Vestibulitis Syndrome

Here are some helpful hints for coping with your pain while you wait for an appointment with one of our specialists. You may find some pain relief from following these suggestions, and once your pain is under control, we recommend that you continue to follow them to prevent further irritation to your vulvar area.

Laundry Care

- use dermatologically-approved detergent on underwear or any other type of clothing/material that comes into contact with the vulva (e.g., pajama bottoms, exercise clothing, towels); Purex and Clear are examples. Use 1/3 to 1/2 the suggested amount per load. Other clothing may be washed with the laundry soap of your choice
- avoid using fabric softener and/or bleach on underwear or any other kind of clothing/material that comes onto contact with the vulva
-avoid using dryer sheets on clothing/material that comes into contact with the vulva; hang-dry these items
- double-rinse underwear and any other kind of clothing that comes into contact with the vulva
- if you use stain-removing products on items that come into contact with the vulva, soak and rinse them in clear water and then wash them in your regular washing cycle (given the restrictions above) in order to remove as much of the product as possible

Clothing Choice

- wear white, 100% cotton underwear to allow air in and moisture out
- go without underwear when possible, such as during the night
- avoid wearing full-length pantyhose; thigh-high or knee-high stockings are recommended as an option
- avoid tight fitting pants or jeans that may put pressure on the vulva
- avoid spandex, lycra and other tight-fitting clothing during workouts
- remove wet bathing suits and exercise clothing promptly

Hygiene Hints

- use soft, white, non-recycled, unscented toilet paper and 100% cotton pads or tampons
- avoid using scented products such as bubble bath, feminine hygiene products (pads or tampons), creams, or soaps that come into contact with the vulvar region
- avoid using feminine deodorant sprays, Vaseline, and colored soaps in the vulvar area
- avoid douching
- when you shower/bathe, do not use soap until the very end, and avoid applying it directly to the vulva
- use mild soaps such as Dove or Ivory
- avoid getting shampoo on the vulvar area

- wash the vulva with water and with your hand; soaps can dry out and irritate the skin and a wash cloth or loofah might be too harsh for the vulvar skin
- wash the vulva with cool to lukewarm water
- pat your vulva area dry, do not rub
- avoid shaving the vulvar area
- keeping the vulvar area dry is important; if you are chronically damp, keep an extra pair of underwear with you in a small bag and change if you become damp during the day at school/work
- if you suffer from vaginal infections, avoid using over-the-counter creams which might irritate the sensitive vulvar skin. Instead, ask your doctor for a prescription for a systemic, oral medication (e.g., Diflucan)

Physical Activities

- avoid exercises that put direct pressure on the vulva such as bicycle riding and horseback riding
- limit intense exercises that create a lot of friction in the vulvar area
- use a frozen gel pack wrapped in a towel to relieve symptoms after exercise
- enroll in a yoga class to learn relaxation and breathing techniques
- avoid swimming in highly chlorinated pools
- avoid using hot tubs

Pre- and Post-Sexual Intercourse Suggestions

- use a lubricant that is water soluble before penetration; Liquid K-Y and Astroglide are examples. If you find that these lubricants irritate you or dry out during intercourse, a pure vegetable oil (such as Crisco, solid or oil) has no chemicals and is also water-soluble
- a topical anaesthetic may help before intercourse; ask your doctor for a prescription - Xylocaine is an example. EMLA is another option, which is available over the counter
- to relieve burning and irritation after intercourse, take cool or lukewarm sitz or baking soda baths (4-5 tablespoons, 1-3 times a day for 10-15 minutes each)
- apply ice or a frozen blue gel pack wrapped in one layer of a hand towel to relieve burning after intercourse
- urinate (to prevent infection) and rinse the vulva with cool water after sexual intercourse

BINIK2001

Chronic Vulvar Pain and Sexual Functioning

An interview with Irv Binik, Ph.D and Sophie Bergeron, Ph.D

Dr. Binik is a professor of psychology at McGill University and the director of the Sex and Couple Therapy Service of the Royal Victoria Hospital, Montreal, Canada. Dr. Bergeron is a clinical psychologist and assistant professor of sexology at the Université du Québec à Montréal.

How would you describe the type of work you do?

Binik: My work consists primarily of research and teaching. My major research interest is trying to understand the different types of pain women experience during sexual intercourse. I spend about 20 percent of my time with clients or in clinically related activities.

Bergeron: My professional activities focus on research and teaching, but I also have a part-time private practice specializing in the treatment of dyspareunia and vaginismus. My research interest is mainly in the area of vulvodynia, more specifically the evaluation of treatments for vulvar vestibulitis.

Can you give a brief overview of "normal" sexual functioning?

We try to avoid the word "normal" when discussing the sexuality of both women and men. Our working definition of a "normal" sex life is one that is satisfying to the individual or couple. This varies dramatically for individuals, depending on age, background, partner, sexual orientation, gender identity and a host of other factors. We are opposed to telling anyone that they should be having sex more or less frequently based on "what everyone else is doing."

Despite the enormous number of popular surveys, we haven't had good statistics about frequency of sexual activity and sexual satisfaction until very recently. Currently, our best source of information is a representative survey of North American men and women ages 18-59 that was carried out by Laumann and colleagues (1994). This survey has been published in two forms, a detailed academic report entitled *The Social Organization of Sexual Behavior* and a more popular version, *Sex in America*. According to this recent survey, women in the 25-29 age group report engaging in sexual intercourse an average of 7.5 times per month. By comparison, in one of our studies we found that women with vulvar vestibulitis in the same age range report engaging in intercourse about 4 times per month.

Based on this recent survey, how satisfied are women in the general population with the quality of their sexual lives?

According to Laumann's survey, about 40 percent of North American women are extremely satisfied, both physically and emotionally, with their sex lives. Regarding the other 60 percent, there are many factors that impact on sexual satisfaction; for example, physical or psychological conditions that interfere with sexual functioning (in the woman or her partner), relationship difficulties, stress, etc. Considering the widespread prevalence of these factors in many women's daily lives, it is not surprising that 60 percent of respondents were not extremely satisfied with their sex lives.

What is the accepted definition of sexual dysfunction?

The accepted definition of sexual dysfunction comes from the *Diagnostic and Statistical Manual of the American Psychiatric Association*. It defines sexual dysfunction as interference with typical aspects of the sexual response cycle, i.e. desire, arousal, or orgasm. There is a separate category entitled "sexual pain," i.e., genital pain which interferes with sexual intercourse. Although problems such as vulvodynia and vulvar vestibulitis are not specifically mentioned in this classification, they would typically be included as such. Our view is that that the various types of vulvodynia should not be considered sexual dysfunctions, but rather genital pain syndromes that interfere with sexuality. As we have said many times, "the pain is not sexual — the sex is painful". This distinction has important implications for treatment and research.

How would you describe the sexual problems experienced by women with vulvar vestibulitis?

In cases of vulvar vestibulitis, the most significant problem is pain

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Sexual Function

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during vaginal penetration. The pain, usually limited to the vestibule, is typically described with adjectives suggesting burning or cutting sensations. These women may also feel deeper vaginal or pelvic pain that may be unrelated to the vulvodynia.

After a few repeated experiences of pain, fear of pain or any pain-eliciting activity usually develops, and this is often followed by some degree of avoidance of sexual activity. From a sexual point of view, the expectation or experience of repeated pain during intercourse may lead to interference with orgasm, reduced arousal and/or diminished desire. For example, one of our studies (Meana et al., 1997) showed that women with vulvar vestibulitis reported significantly lower levels of desire and arousal as well as significantly fewer episodes of intercourse. They also reported being less successful at achieving orgasm through oral stimulation and sexual intercourse.

Another response reported by these women is the contraction of the vaginal muscles in response to the pain, a condition known as vaginismus. These contractions can make vaginal penetration impossible. We don't know the proportion of women with vulvodynia who suffer from this problem. Although all the responses we have discussed can be termed sexual dysfunction, they are, in our view, natural psychological/physical responses to the experience of pain paired with penetration.

Do women with dysesthetic vulvodynia experience the same sexual problems as women with vulvar vestibulitis?

The sexual problems experienced by women with vulvar pain are quite variable and there are no studies that differentiate between the responses of women with vulvar vestibulitis or dysesthetic vulvodynia. Our clinical experience suggests that women with dysesthetic vulvodynia are generally more emotionally distressed than women with vulvar vestibulitis since their pain occurs even when there is no direct stimulation of the genital area. In many women with dysesthetic vulvodynia, the pain not only interferes with their sex lives; it may also affect their ability to engage in other important daily activities such as walking or sitting.

Pain medications such as tricyclic antidepressants and anticonvulsants are often prescribed for the treatment of vulvodynia. Do these medications affect sexual functioning?

Some individuals treated with tricyclics such as amitryptiline (Elavil) have reported experiencing less sexual desire and more difficulty reaching orgasm. However, these women were taking antidepressants as a treatment for depression which typically requires much higher doses than those used in the treatment of vulvodynia. So we don't know if the smaller doses prescribed for vulvodynia have any sexual side effects at all. As for the newer anticonvulsants that are now being prescribed in the treatment of vulvodynia, e.g., Neurontin, no studies have been conducted to date to evaluate their side effects on patients' sexual functioning.

What kind of psychological therapy do you think is the most helpful to vulvar pain sufferers?

We generally recommend the use of cognitive-behavioral pain control techniques to reduce or eliminate pain. These include pain monitoring, relaxation, education about vulvar pain and its impact on sexuality, distraction techniques, coping strategies such as learning to diminish catastrophic thinking, and other methods to help decrease the fear of pain and penetration. Apart from the obvious goal of reducing vulvar pain, this therapy focuses on helping women to conceptualize their pain as a multidimensional problem influenced by many factors — their thoughts, emotions, behaviors and couple interactions — all factors over which they have some degree of control. Also, we typically recommend pelvic floor physical therapy, including biofeedback, to deal with any muscular components of the pain. We have been experimenting with other methods of pain control such as hypnosis and acupuncture. As the pain lessens, we typically use sex therapy techniques to try to "rehabilitate" aspects of the sexual response cycle that have been negatively affected. If all attempts to control the pain without surgery fail, then we recommend a vestibulectomy, but only for women with vulvar vestibulitis.

When you see clients with sexual problems, do you usually see them with a partner? How can partners help?

It is often a good idea to see a woman with her partner since having him actively involved in the therapy is an advantage. This affords the partner an opportunity to learn more about vulvodynia, which is a key factor in providing support. The partner can also partici-

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pate in some homework exercises aimed at reducing the fear of pain and the fear of penetration. Finally, involvement can give the partner an outlet for his emotional suffering in this frustrating situation. A partner's participation is not necessary, however, and we do see women alone and in women's groups. Some women do not have partners or do not wish to get involved with someone before eliminating their pain.

In our treatment study, cognitive-behavioral therapy was carried out in a group format; six to eight women per group met once a week for 10 sessions. We found this group format to be very popular because all the women suffered from similar problems and provided each other with a lot of emotional support.

Does the length of time a woman has suffered from vulvar pain affect the outcome of sex therapy?
Our treatment study suggests that the duration of pain has no impact on the outcome of treatment.

Most women with chronic vulvar pain learn to avoid sexual intimacy. Can this response be reversed after the pain is reduced?
One of the difficulties with all chronic pain is that after the pain has been reduced or eliminated, some of the associated disability still remains. This is as true of back pain and resuming work as it is of vulvodynia and sexual intercourse. For some, the resumption of sexual activity happens immediately and effortlessly; for others, a gradual re-learning process is necessary to break the association between sex and pain. Some vulvar pain patients may need to see a sex therapist to facilitate the re-learning process.

In our treatment study, which focused on severe cases of vulvar vestibulitis, we found that general sexual functioning seemed to improve after undergoing either a behavioral or surgical pain-reduction intervention. However, frequency of intercourse did not increase significantly after completion of treatment, and still had not increased at a two and a half year follow-up of study participants. This may indicate that sexual counselling should be recommended more often to help improve the sex lives of women whose vulvar pain has diminished or disappeared. It may also mean that women who have suffered from vulvar vestibulitis for a number of years have had to modify their sexual activities to take the focus off intercourse; once the pain disappears, they may not feel the need to engage in intercourse more often than they used to when they had pain.

Do you have any advice for women who have been recently diagnosed with vulvar vestibulitis or dysesthetic vulvodynia?
Our basic advice is not to give up. Although we have a lot to learn about treating chronic vulvar pain, persistence does seem to pay off. There are a number of available treatments and although we can't predict in advance which treatment will help which woman, many patients have been helped.

What were the results of your study that compared treatments for vulvar vestibulitis?
Our study compared three treatments for vulvar vestibulitis: 1) a combination of group cognitive-behavioral pain management and sex therapy, 2) pelvic floor biofeedback, and 3) vestibulectomy (surgery). In this treatment study, we found that group cognitive-behavioral therapy resulted in an average 38 percent reduction of pain, and either totally eliminated or significantly reduced the pain in 40 percent of the participants. Biofeedback produced very similar results. Vestibulectomy had the highest success rate, in that 70 percent of participants reported either a complete elimination or substantial reduction of pain during intercourse.

Based on our clinical experience, however, we have seen that some women are not interested in undergoing an invasive intervention. For these women, we have found that a combination of treatment approaches — for example, cognitive-behavioral therapy AND physical therapy/biofeedback — increases the chance of a successful outcome.

References

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Laumann, E. O., Gagnon, J. H., Michael, R. T. and Michaels, S. *The social organization of sexuality*, University of Chicago Press, Chicago, IL, 1994.

Meana, M., Binik, Y. M., Khalifé, S. and Cohen, D. Biopsychosocial profile of women with dyspareunia. *Obstet. Gynecol.* 1997; 90:583-589. ■

Réponses à Quelques-unes de vos Questions sur le Syndrome de la Vestibulite Vulvaire (SVV)

Qu'est-ce que le syndrome de la vestibulite vulvaire?

Le syndrome de la vestibulite vulvaire (SVV) est l'une des causes les plus fréquentes de douleur lors des relations sexuelles chez les femmes âgées de moins de 40 ans. Nous ne connaissons pas la fréquence exacte du SVV, mais environ 10-15% des femmes pré-ménopausées se plaignent de douleur récurrente lors des relations sexuelles. Les femmes avec le SVV rapportent ressentir une douleur localisée à l'entrée du vagin (appelé le vestibule vulvaire) qui brûle et/ou coupe lors des relations sexuelles ainsi que lors d'activités impliquant une pression au vestibule (ex., insertion de tampon, examens gynécologiques, promenade en bicyclette). Quoique la douleur disparaisse lorsqu'il n'y a plus de pression exercée sur le vestibule, plusieurs femmes rapportent ressentir de la douleur et de l'inconfort après les relations sexuelles.

Environ 50% des femmes qui souffrent de la vestibulite vulvaire ont ce qui s'appelle la forme *primaire* du SVV, ce qui indique que la douleur est présente depuis leur première tentative d'avoir une relation sexuelle. L'autre 50% des femmes ont la forme *secondaire ou acquise* du SVV qui se développe après une période de relations sexuelles non-douloureuses et dans plusieurs cas après un facteur aggravant (ex., des infections vaginales répétées, des maladies transmises sexuellement, etc.). Toutefois, nous connaissons peu au sujet des causes du SVV et plusieurs professionnels de la santé s'entendent pour dire que le SVV est causé par une combinaison de facteurs. Une recension des articles scientifiques publiés sur ce sujet est disponible si vous êtes intéressées à en apprendre davantage sur le SVV.

Le SVV est diagnostiqué à l'aide d'un examen avec un coton-tige durant lequel le gynécologue applique un coton-tige à divers sites autour du vestibule vulvaire. Cet examen est généralement assez douloureux pour les femmes souffrant du SVV. Si vous pensez avoir le SVV, nous vous recommandons de consulter un gynécologue pour passer l'examen avec un coton-tige.

Comment le SVV est-il traité? Les résultats scientifiques ont démontré que les traitements suivants sont efficaces pour le SVV:

- La thérapie de contrôle et de soulagement de la douleur en format de groupe, de couple ou individuel (Service de thérapie sexuelle et de couple, Hôpital Royal Victoria)
- La physiothérapie ou l'entraînement musculaire assisté du biofeedback
- La chirurgie pour exciser la région du vestibule qui est douloureuse (vestibulectomie).

Nous recommandons généralement de commencer avec la thérapie de contrôle ou de soulagement de la douleur ou la physiothérapie ou encore les deux combinées. La thérapie pour contrôler ou soulager la douleur et la physiothérapie sont aussi efficaces l'une que l'autre, mais les femmes avec le SVV sont plus satisfaites de la thérapie de contrôle de la douleur en format de groupe. Les deux traitements se complètent très bien. Tel que démontré dans une étude d'évaluation de traitements publiée dans le périodique Pain, 35% à 40% des femmes qui ont suivi l'un ou l'autre de ces traitements ont rapporté une diminution importante ou un soulagement complet de leur douleur. Si il n'y a aucune amélioration après la physiothérapie ou la thérapie pour contrôler ou soulager la douleur, une vestibulectomie est généralement recommandée. La vestibulectomie est une procédure d'un jour relativement mineure qui est effectuée sous anesthésie générale. À la suite de l'opération, la femme va généralement ressentir de l'inconfort dans la région vaginale. Les relations sexuelles ainsi que les activités où il y a pénétration devraient être tentées seulement six à huit semaines après la chirurgie. 70% des femmes qui ont subi la chirurgie rapportent une grande diminution ou un soulagement complet de leur douleur dans l'étude de traitement mentionnée ci-haut.

Les traitements qui sont efficaces pour les autres types de douleur peuvent également aider les femmes avec le SVV à contrôler leur douleur. Toutefois, il n'y a aucune preuve de leur efficacité chez les femmes souffrant du SVV. Néanmoins, certaines femmes peuvent bénéficier de ces traitements. Ils incluent:

- Lubrifiants (ex., K-Y en liquide, huile végétale) avant les relations sexuelles
- Anesthésiques topiques (comme la Xylocaine [une prescription de votre médecin est nécessaire] et EMLA [disponible au comptoir] avant les relations sexuelles
- Acuponcture
- Hypnose

Vous pouvez avoir pris connaissance d'informations sur d'autres formes de traitements pour le SVV comme des crèmes vaginales, des diètes et de la chirurgie au laser. Il n'existe aucune preuve de leur efficacité et certains de ces traitements peuvent en fait causer des effets secondaires non-intentionnels.

Des suggestions pour faire face à votre douleur à court terme sont données sur la feuille "Conseils Pratiques pour les Femmes Atteintes du Syndrome de la Vestibulite Vulvaire" qui est incluse dans le document ci-joint.

Qui contacter?

Gynécologue:

- Dr. Samir Khalifé (514-933-8877), 3550 chemin Côte des Neiges, Suite 700

Psychologues:

- Service de thérapie sexuelle et de couple, Hôpital Royal Victoria, 1025 Avenue des Pins Ouest: Dr. Sophie Bergeron, Ph.D., Dr. Irv Binik, Ph.D., Ms. Julie Larouche, M.Ps, Candidate doctorale, et Ms. Caroline Pukall, Candidate doctorale, peuvent être contactés par l'intermédiaire de la secrétaire Judi Young au

514-398-6094.

- Pratique Privée: Dr. Louise Paré (450-259-5690) 3550 Chemin Côte des Neiges, Suite 700; et 620 Boulevard St.Foy, Suite #5, Longueuil, Québec

Physiothérapeutes:

- Claudia Brown (514-259-3791) 5700 St.Zotique, Suite 205, Montréal Est
- Marie-Josée Lord (514-697-1141) 101 Avenue Donegani, Pointe-Claire

Pour plus d'informations

Adresses de sites Web:

- www.vulvarhealth.org
- www.nva.org

Pour recevoir des articles scientifiques sur le VVS et pour plus d'informations concernant le SVV, S.V.P. contacter Caroline Pukall par téléphone (514-398-5323) ou par courriel (caroline.pukall@mail.mcgill.ca)

Conseils Pratiques pour les Femmes Atteintes du Syndrome de la Vestibulite Vulvaire

Voici quelques conseils pratiques qui vous aideront à maîtriser la douleur avant la date prévue de votre rendez-vous avec l'un de nos spécialistes. En suivant les suggestions suivantes, vous remarquerez peut-être un soulagement de la douleur. Une fois que votre douleur sera sous contrôle, nous vous recommandons de continuer à les suivre pour prévenir davantage l'irritation.

Soin de Lessive

- Utilisez du détergent approuvé par les dermatologues pour vos sous-vêtements ou tout autre type de matériel/vêtement qui entre en contact avec la région vulvaire (ex., bas de pyjama, vêtement d'exercice, serviette de bain); Purex et Clear en sont des exemples.
- Utilisez seulement le tiers ou la moitié de la quantité recommandée par brassée. Vos autres vêtements peuvent être lavés avec le détergent de votre choix
- Évitez d'utiliser de l'assouplisseur et/ou de l'eau de javel pour vos sous-vêtements ou sur tout autre type de matériel/vêtement qui entre en contact avec la région vulvaire
- Évitez d'utiliser de l'assouplisseur en feuille sur les vêtements/matériaux qui entre en contact avec la région vulvaire; séchez à plat ces items
- Rincez deux fois vos sous-vêtements ou tout autre type de vêtement qui entrent en contact avec la région vulvaire
- Si vous utilisez des détachants sur des items qui entrent en contact avec la region vulvaire, trempez et rincez-les dans l'eau claire pour ensuite les lavez dans votre cycle régulier (suivant les instructions précédentes) dans le but d'éliminer le détachant le plus possible

Choix de vêtement

- Portez des sous-vêtements blancs, 100% coton pour permettre à l'air d'entrer et à la moisissure de sortir
- Ne portez pas de sous-vêtement lorsque possible; par exemple durant la nuit
- Évitez de porter des collants pleine longueur; des collants qui montent jusqu'au cuisse ou aux genoux sont recommandés
- Évitez les pantalons ou jeans serrés qui pourraient mettre de la pression sur le vagin
- Évitez le spandex, lycra ou tout autre vêtement serré lorsque vous vous entraînez
- Enlevez promptement tous vêtements mouillés comme les maillots de bain ou vêtements d'exercice

Conseils Hygiéniques

- Utilisez du papier de toilette blanc, non-recyclé, non-parfumé et des serviettes sanitaires ou tampons 100% coton
- Évitez d'utiliser des produits parfumés comme de la mousse de bain, des produits hygiéniques pour les femmes (serviettes sanitaires ou tampons), crèmes ou savons qui entrent en contact avec la région vulvaire
- Évitez d'utiliser dans la région vulvaire des déodorants féminins en aérosol, de la vaseline ainsi que des savons colorés
- Évitez les douches vaginales

- Lorsque vous prenez un bain/douche, n'utilisez pas de savons avant la toute fin et évitez d'en appliquer directement sur la région vulvaire
- Utilisez des savons doux comme Dove ou Ivory
- Évitez d'avoir du shampooing dans la région vulvaire
- Lavez la région vulvaire avec vos mains et de l'eau; les savons peuvent assécher et irriter la peau; les serviettes de bain peuvent être également trop rudes pour la peau vaginale
- Lavez la région vulvaire avec de l'eau froide ou tiède
- Tapotez votre vagin pour le sécher, ne frottez pas
- Évitez de raser la région vulvaire
- Il est important de conserver la région vulvaire sèche; si vous êtes régulièrement humide, gardez une seconde paire de sous-vêtement dans un petit sac pour vous permettre de les changer lorsqu'ils deviennent humides durant la journée à l'école ou au travail
- Si vous souffrez d'infections vaginales, évitez d'utiliser des crèmes non-prescrites qui pourraient irriter la peau sensible de la vulve. Demandez plutôt à votre médecin de vous prescrire des médicaments systémiques et oraux (ex., Diflucan).

Activités Physiques

- Évitez les exercices qui mettent une pression directe sur le vagin comme les randonnées en bicyclette ou l'équitation
- Limitez les exercices intenses qui créent beaucoup de friction dans la région vulvaire
- Utilisez un "ice pack" enroulé dans une serviette pour soulager la région vulvaire
- Inscrivez-vous à des sessions de yoga pour apprendre des techniques de relaxation et de respiration
- Évitez de vous baigner dans les piscines qui ont une concentration de chlore élevée
- Évitez de prendre des bains tourbillon public

Suggestions Pour Avant et Après les Relations Sexuelles

- Utilisez avant la pénétration un lubrifiant qui est soluble dans l'eau; Liquide K-Y ou Astroglide en sont des exemples. Si vous trouvez que ces lubrifiants vous irritent ou vous assèchent lors des relations sexuelles, utilisez une huile végétale pure (comme du Crisco en huile ou solide) qui ne contient aucun agent chimique et qui est soluble dans l'eau
- Un anesthésique topique peut vous aider avant les relations sexuelles; demandez à votre médecin pour une prescription: Xylocaine est un exemple. EMLA est une autre option qui est accessible sans presription
- Pour soulager vos sensations d'irritation et de brûlure après les relations sexuelles, prenez un bain froid ou tiède ou encore un bain de bicarbonate de soude (4-5 cuillères à table, 1-3 fois par jour de 10 à15 minutes)
- Appliquez de la glace ou un "ice pack" enroulé dans une serviette à main pour soulager les sensations de brûlure après les relations sexuelles
- Urinez (pour prévenir les infections) et rincez la région vulvaire avec de l'eau froide après vos relations sexuelles

Douleur vulvaire chronique et fonction sexuelle

National Vulvodynia Association (NVA) News, Printemps 2001

Une entrevue avec Irv Binik, Ph.D et Sophie Bergeron, Ph.D

Dr. Binik est professeur en psychologie à l'université McGill et directeur du Service de Thérapie Sexuelle et de Couple à l'Hôpital Royal Victoria, Montréal, Canada.
Dr. Bergeron est psychologue clinicienne et professeure en sexologie à l'université du Québec à Montréal.

Comment décrieriez-vous le type de travail que vous effectuez ?
Binik : Mon travail comprend en grande partie la recherche et l'enseignement. Mon intérêt de recherche majeur est l'approfondissement de notre compréhension des différents types de douleur que les femmes peuvent ressentir lors des relations sexuelles. 20% de mon temps est consacré à des clients ou à des activités cliniques.

Bergeron : Mes activités professionnelles se concentrent sur la recherche et l'enseignement mais j'ai également une pratique privée à temps partiel qui se spécialise dans le traitement de la dyspareunie et du vaginisme. Mon intérêt de recherche principal est la vulvodynie. Plus spécifiquement, mes travaux portent sur l'évaluation des traitements pour la vestibulite vulvaire.

Pouvez-vous donner une brève description du fonctionnement sexuel "normale" ?
On essaye d'éviter le mot "normale" lorsque l'on discute de la sexualité chez la femme et chez l'homme. Notre définition d'une vie sexuelle "normale"' est une vie sexuelle satisfaisante pour l'individu ou le couple. Ceci varie dramatiquement d'un d'individu à l'autre tout dépendant de l'âge, de l'origine culturelle, du partenaire, de l'orientation sexuelle, de l'identité sexuelle ainsi que d'une multitude d'autres facteurs. Nous sommes contre le fait de dire à quelqu'un qu'il devrait avoir des relations sexuelles plus ou moins fréquemment en se basant sur ce que les autres font.

Malgré le grand nombre de sondages populaires, nous n'avons jamais eu jusqu'à maintenant de statistiques valables sur la fréquence d'activité sexuelle et sur la satisfaction sexuelle. Présentement, notre meilleure source d'information est un sondage représentatif des hommes et femmes entre 18-59 ans en Amérique du Nord qui fut réalisé par Laumann et collègues (1994). Ce sondage a été publié en deux formats : un rapport académique détaillée sous le titre de '' The Social Organization of Sexual Behavior'' (L'Organisation sociale du comportement sexuel) ainsi qu'une version plus populaire ''Sex in America'' (Le Sexe en Amérique). Selon ce récent sondage, les femmes entre 25-29 ans rapportent avoir en moyenne 7.5 relations sexuelles par mois. En comparaison, une de nos études a démontré que les femmes souffrant de la vestibulite vulvaire dans le même groupe d'âge rapportent avoir en moyenne 4 relations sexuelles par mois.

En vous basant sur ce récent sondage, à quel point les femmes dans la population générale sont satisfaites de la qualité de leur vie sexuelle ?
Selon le sondage de Laumann, environ 40% des femmes en Amérique du Nord sont extrêmement satisfaites de leur vie sexuelle sur le plan physique et émotionnel. Pour ce qui consiste de l'autre 60% des femmes, plusieurs facteurs peuvent avoir un impact sur la satisfaction sexuelle; par exemple, les problèmes physiques et psychologiques qui interfèrent avec le fonctionnement sexuel (chez la femme ou son partenaire), les difficultés relationnelles, le stress, etc. En considérant la fréquence répandue de ces facteurs chez plusieurs femmes, il n'est pas surprenant que 60% des femmes ont répondu ne pas être extrêmement satisfaites de leur vie sexuelle.

Quel est la définition acceptée de la dysfonction sexuelle ?
La définition acceptée de la dysfonction sexuelle vient du Diagnostic and Statistical Manual de l'American Psychiatric Association. Il définit la dysfonction sexuelle comme une interférence avec les aspects typiques du cycle de la réponse sexuelle, c'est-à-dire le désir, l'excitation ou l'orgasme. Il y a une catégorie séparée intitulée ''la douleur sexuelle'', c'est-à-dire une douleur génitale qui interfère avec les relations sexuelles. Malgré le fait que la vulvodynie et la vestibulite vulvaire ne soient pas spécifiquement mentionnées dans cette classification, elles seraient typiquement incluses dans cette catégorie. Notre perception est que les divers types de vulvodynie ne devraient pas être considérés comme des dysfonctions sexuelles mais plutôt comme des syndromes de douleur génitale qui interfèrent avec la sexualité. Comme nous l'avons mentionné plusieurs fois, la douleur n'est pas sexuelle— le rapport sexuel est douloureux. Cette distinction a des implications importantes pour le traitement et la recherche.

Comment décririez-vous les problèmes sexuels des femmes ayant une vestibulite vulvaire ?
Dans le cas de la vestibulite vulvaire, le problème le plus significatif est l'expérience d'une douleur lors de la pénétration vaginale. La douleur est habituellement limitée au vestibule et est typiquement décrite à l'aide d'adjectifs suggérant des sensations de brûlure et de coupure. Ces femmes peuvent également ressentir de la douleur pelvienne ou vaginale plus profonde qui pourrait ne pas être reliée à la vulvodynie.

Après quelques expériences répétées de douleur, il n'est pas rare qu'une peur de la douleur ou de toutes activités qui provoquent de la douleur se développe, engendrant souvent un évitement des activités sexuelles. D'un point de vue sexuel, la prévision ou l'expérience d'une douleur répétée lors des relations sexuelles peut mener à des difficultés à obtenir un orgasme, à une réduction de l'excitation sexuelle, et/ou à une diminution du désir. Par exemple, l'une de nos études (Meana et al., 1997) a démontré que les femmes ayant la vestibulite vulvaire rapportent des degrés de désir et d'excitation sexuelle significativement plus bas que celles n'en souffrant pas, ainsi que moins d'épisodes de relations sexuelles. Elles rapportent également avoir plus de difficulté à obtenir un orgasme à l'aide de stimulation orale et de relation sexuelle avec pénétration.

Une autre réponse rapportée par ces femmes est l'expérience d'une contraction du muscle vaginal en réponse à la douleur, une condition connue sous le nom de vaginisme. Ces

contractions peuvent rendre la pénétration vaginale impossible. Nous ne connaissons pas la proportion de femmes ayant une vulvodynie qui souffrent de vaginisme. Même si toutes les difficultés que nous avons mentionnées peuvent être nommées dysfonctions sexuelles, selon notre point de vue, elles sont des réponses psychologiques/physiques naturelles à la douleur ressentie lors de la pénétration vaginale.

Est-ce que les femmes souffrant de vulvodynie dysesthétique éprouvent les mêmes problèmes sexuels que les femmes aux prises avec la vestibulite vulvaire ?
Les problèmes sexuels éprouvés par les femmes avec de la douleur vulvaire sont assez variables. Il n'y a aucune étude qui différencie les réponses de femmes ayant une vestibulite vulvaire de celles de femmes ayant une vulvodynie dysesthétique. Notre expérience clinique nous porte à croire que les femmes atteintes de vulvodynie dysesthétique vivent généralement une plus grande détresse émotive que les femmes atteintes de vestibulite vulvaire puisque leur douleur est chronique, c'est-à-dire qu'elles la ressentent même lorsqu'il n'y a aucune stimulation directe de la région génitale. Chez plusieurs femmes souffrant de vulvodynie dysesthétique, la douleur interfère non seulement avec leur vie sexuelle mais également avec leur capacité à s'engager dans d'autres activités quotidiennes telles que marcher et s'asseoir.

Les médicaments contre la douleur comme les antidépresseurs tricycliques et les anticonvulsivants sont souvent prescrits pour le traitement de la vulvodynie. Est-ce que ces médicaments affectent le fonctionnement sexuel ?
Certains individus traités à l'aide de tricycliques comme l'amitryptiline (Elavil) ont rapporté avoir moins de désir sexuel et plus de difficulté à obtenir un orgasme. Toutefois, ces femmes prenaient des antidépresseurs pour traiter leur dépression ce qui requiert généralement des doses beaucoup plus élevées que celles prescrites pour le traitement de la vulvodynie. Cependant, nous ne savons pas si les doses moins grandes prescrites pour la vulvodynie ont des effets secondaires. En ce qui concerne les nouveaux anticonvulsivants qui sont maintenant prescrits pour le traitement de la vulvodynie (ex., Neurontin), aucune étude n'a été effectuée jusqu'à ce jour pour évaluer leurs effets secondaires sur le fonctionnement sexuel.

Quel genre de psychothérapie croyez-vous être la plus utile pour les femmes souffrant de douleur vulvaire ?
Nous recommandons généralement d'utiliser des techniques cognitivo-comportementales de contrôle de la douleur pour diminuer ou éliminer la douleur. Ceci comprend du monitorage de la douleur, de la relaxation, de l'éducation sur la douleur vulvaire et ses impacts sur la sexualité, des techniques de distraction, des stratégies de « coping » telles qu'apprendre à diminuer les pensées catastrophiques, ainsi que d'autres méthodes qui aident à diminuer la peur de la douleur ou la peur de la pénétration. En plus de l'objectif central de réduction de la douleur vulvaire, cette thérapie vise à aider les femmes à conceptualiser leur douleur comme étant un problème multidimensionnel qui peut être influencé par une multitude de facteurs – les pensées, les émotions, les comportements et les interactions de couple -- tous des facteurs que les femmes peuvent contrôler jusqu'à un certain degré. Généralement, nous recommandons aussi de la physiothérapie pour la région pelvienne. Ceci comprend du biofeedback pour traiter les éléments musculaires

associés à la douleur. Nous avons également expérimenté d'autres méthodes de contrôle de la douleur comme l'hypnose et l'acupuncture. À mesure que la douleur diminue, nous intégrons généralement des techniques de thérapie sexuelle pour essayer de réhabiliter les aspects du cycle de la réponse sexuelle qui ont été affectés. Si tous les essais de contrôle de la douleur ont échoué, nous recommandons une vestibulectomie mais seulement pour les femmes ayant une vestibulite vulvaire.

Lorsque vous voyez des clientes avec des problèmes sexuels, est-ce que vous les voyez généralement avec leur partenaire ? Comment les partenaires peuvent-ils aider ou contribuer ?

C'est souvent une bonne idée de voir la femme avec son partenaire; c'est même un avantage que de pouvoir impliquer le partenaire dans la thérapie. Ceci lui donne l'opportunité de se renseigner davantage sur la vulvodynie, un élément clé qui va influencer la qualité du support émotif qu'il procure à sa conjointe. Il peut également prendre part à certains exercices prescrits à la maison qui ont pour but de réduire la peur de la douleur et la peur de la pénétration vaginale. Finalement, la participation du partenaire peut constituer pour lui une occasion d'exprimer la souffrance émotive générée par cette situation frustrante. La participation du partenaire n'est toutefois pas nécessaire et nous voyons des femmes individuellement et en groupe. Certaines femmes n'ont pas de partenaire ou ne désirent pas s'investir dans une relation avant l'élimination ou la diminution de leur douleur.

Dans notre étude sur les traitements, la thérapie cognitivo-comportementale a été effectuée dans un format de groupe; un groupe de six à huit femmes se rencontraient une fois par semaine pour un total de 10 séances. Nous avons trouvé que ce format de groupe a été très populaire puisque toutes les femmes souffraient de problèmes similaires et pouvaient se comprendre et s'entraider mutuellement.

Est-ce que la durée de temps dont la femme a souffert de douleur vulvaire affecte les résultats de la thérapie sexuelle ?

Notre étude sur les traitements suggère que la durée du problème de douleur n'a aucun impact sur les résultats du traitement.

La majorité des femmes aux prises avec des douleurs vulvaires chroniques apprennent à éviter l'intimité sexuelle. Peut-on renverser cette réponse après avoir réduit la douleur ?

Une des difficultés propres aux douleurs chroniques en général est qu'après avoir diminué ou éliminé la douleur, certaines 'séquelles' peuvent être encore présentes. Ceci est aussi valable pour les maux de dos chroniques et l'invalidité au travail que pour la vulvodynie et les relations sexuelles. Pour certaines, la reprise des activités sexuelles se fait immédiatement et sans efforts, pour d'autres, un processus graduel de ré-apprentissage est nécessaire pour briser l'association entre les rapports sexuels et la douleur. Certaines patientes avec de la douleur vulvaire peuvent avoir besoin de consulter

un sexothérapeute (psychologue ou sexologue) afin de faciliter le processus de ré-apprentissage.

Dans notre étude sur les traitements qui portait sur les cas de vestibulite vulvaire sévère, nous avons trouvé que le fonctionnement sexuel général semblait s'améliorer suite à une intervention comportementale ou chirurgicale de réduction de la douleur. Toutefois, la fréquence des relations sexuelles chez les participantes de l'étude n'a pas augmenté significativement après l'accomplissement du traitement et n'avait toujours pas augmenté après deux ans et demi de suivi. Ceci peut indiquer que la thérapie sexuelle devrait être recommandée plus fréquemment pour améliorer les vies sexuelles des femmes chez qui la douleur vulvaire a diminué ou disparu. Ceci peut également signifier que les femmes qui ont souffert de la vestibulite vulvaire pendant plusieurs années ont dû modifier leurs activités sexuelles pour diminuer l'emphase mise sur la pénétration vaginale. Une fois que la douleur disparaît, elles ne ressentent peut-être pas le besoin de s'engager dans des relations sexuelles avec pénétration plus fréquemment qu'auparavant.

Que recommanderiez-vous aux femmes ayant récemment reçu le diagnostic de vestibulite vulvaire ou de vulvodynie dysesthétique ?

Notre conseil premier est de ne pas se décourager. Même si nous avons beaucoup à apprendre au sujet du traitement de la douleur vulvaire chronique, la persistance et la détermination semblent rapporter. Il y a de nombreux traitements disponibles. Même si nous ne pouvons pas prédire d' avance quel traitement peut aider quelle femme, la majorité des patientes qui ont reçu un traitement semble en avoir bénéficié.

Quels furent les résultats de votre étude comparant les différents traitements pour la vestibulite vulvaire ?

Notre étude comparait trois traitements pour la vestibulite vulvaire: 1) une combinaison de thérapie sexuelle et de gestion de la douleur cognitivo-comportementale de groupe, 2) le biofeedback pour la région pelvienne, 3) la vestibulectomie (chirurgie). Dans cette étude, nous avons trouvé que la thérapie cognitivo-comportementale de groupe a amené une réduction moyenne de la douleur de 38% et a totalement éliminé ou significativement diminué la douleur chez 40% de nos participantes. Le biofeedback a produit des résultats très similaires. La vestibulectomie a eu le taux de succès le plus élevé : 70% des participantes ont rapporté une élimination complète ou significative de la douleur lors des relations sexuelles.

En se basant sur notre expérience clinique, nous croyons que certaines femmes ne semblent pas intéressées à subir une intervention chirurgicale aussi majeure. Pour ces femmes, nous avons trouvé qu'une combinaison de traitements-- par exemple, la thérapie cognitivo-comportementale et la physiothérapie/biofeedback --augmente les chances de réussite.

Références

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Appendix 12 –

Vulvalgesiometer Instruction Manual

Vulvalgesiometer Instruction Manual, November 2002

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Introduction

Thank you very much for your interest in the vulvalgesiometer set. We developed this device to help researchers and gynecologists measure pain in the genital region accurately. We found that other devices for pain measurement in non-genital areas are not useful for the genital region; they are either not sterilizable at all or necessitate lengthy sterilization processes, they exert pressures that are too high, and/or the surface area of the pressure applicator is too big for measuring sensitivity over small vulvar areas (e.g. the part of the vestibule that surrounds the hymeneal ring). Although this device was developed with the specific use of testing the genital area of women, it can also be used to test the genital region of men, as well as other parts of the body.

In this booklet, you will find the instruction manual and, in the appendix, a submitted article containing data on the vulvalgesiometer. Please do not hesitate to contact Caroline Pukall if you need any further information.

Table of Contents for Instruction Manual

Appendix: Pukall CF, Binik YM, Khalifé S. (submitted). A new instrument and method for pain assessment and diagnosis in vulvar vestibulitis syndrome.

INSTRUCTION MANUAL

1) What your vulvalgesiometer set includes:

* A clear bag containing a set of seven (7) vulvalgesiometers
* Four envelopes containing pre-cut cotton-swabs (20 for each vulvalgesiometer)

Information on the vulvalgesiometers

The vulvalgesiometer (see Figure 1, page 7) is a new, simple mechanical device for standardized pain measurement in the genital region. It consists of seven hand-held, syringe-like devices that contain springs of various compression rates. These different springs allow for the exertion of a wide range of force levels: the set exerts 24 force levels from a minimum of 3g to a maximum of 1kg. The springs and all other components of the vulvalgesiometer are non-magnetic; therefore, they are safe to use in magnetic environments, such as MRI.

The springs used in the vulvalgesiometers keep consistent compression rates over long periods of time, thereby eliminating the need to replace or re-calibrate them frequently (see Calibration section, page 6).

In addition, unlike other devices, the force levels are measured in grams, a unit of measurement that does not require conversion equations.

At the end of each vulvalgesiometer, there is room for one standard sized cotton-swab to be inserted. The cotton-swabs are easily removed and disposed of, eliminating the need for lengthy sterilization processes (see Cotton-swabs section, page 5).

The vulvalgesiometers are organized according to number and letter (see Table 1, page 4). The number is indicated on the *top* of the vulvalgesiometer (see Figure 1, page 7). The black line marked on the vulvalgesiometer closest to the cotton-swab is A, the next higher one is B, and so on.

Because of the wide range of forces available and the populations you may be testing (e.g. women who have genital/vulvar hypersensitivity), you will not use all the levels of each of the vulvalgesiometers. Women with vulvar vestibulitis syndrome typically report pain by the end of vulvalgesiometer #1. Control women vary in their sensitivity and may report pain anywhere between 150g up to 1kg; some women will report no pain even at 1kg (see appendix).

Suggested methods of application

The method by which to apply force with the vulvalgesiometers is to start at the lowest level (i.e. 1A which exerts 3g). Hold your hand steady, and hold the vulvalgesiometer as perpendicularly as possible to the skin area being tested. Push down on the cotton-swab until the *top* of the inner white plastic molding reaches the first black line (see Figure 2, page 8). Hold it against the skin for 1 – 2 seconds, and then remove it. At this point, you can enquire as to whether the sensation was painful or not. If it was not, wait 10-15 seconds, and apply to the next level (1B), and so on, until the woman reports pain. This method of application determines the patient's pain threshold.

Once the pain threshold is reached, you may decide to stop. However, you may prefer to continue applying pressures above the pain threshold to observe the pattern of pain with increasing force and stop once the pain reaches a high level (about a 6-8 on 10 for pain intensity). Additionally, you may want to choose a painful level of 4-6 on 10 and apply this level for a period of time (e.g., 40 seconds) to examine whether the genital tissue habituates or sensitizes in response to the continuous pressure.

Another method that is currently being used is to apply pre-determined force levels to various genital regions to examine differences in response in patients versus control participants. In order to use this method, it is helpful to have some prior data on what patients consider painful and what control participants consider innocuous. One advantage of this method is that if you are testing several genital sites for pain thresholds, you can reduce the time required by applying this shorter method to one or two selected areas.

With whatever method of application you are using, it is recommended that you use pain intensity and pain unpleasantness rating scales from 0 to 10, for example. Additionally, asking women to describe their pain using word lists may also prove useful and will help you understand their multi-dimensional pain experience.

Although women with vulvar vestibulitis syndrome have been found to have lower tactile thresholds in addition to lower pain thresholds (Pukall et al., 2002), measurement of tactile thresholds with the vulvalgesiometer is not possible. The reason for this is that most women, if not all, will feel the cotton-swab on their skin even at 3g.

Please note that there is a cross-over between vulvalgesiometers numbers 5 and 6 (see Table 1, page 4): **5A** must be followed by **6A**, which must be followed by **5B** in order to follow the increasing pattern of force.

Table 1. Vulvalgesiometer numbers, levels, and forces exerted in g.

Vulvalgesiometer Number	Vulvalgesiometer Level	Force Exerted (g)
1	A	3
1	B	5
1	C	10
1	D	15
1	E	20
1	F	25
2	A	30
2	B	50
2	C	70
3	A	80
3	B	100
3	C	110
3	D	130
3	E	150
4	A	200
5	A	250
6	**A**	**300**
5	B	350
7	A	400
7	B	500
7	C	640
7	D	750
7	E	880
7	F	1000

2) Cotton-swabs

We have included a start-up supply of 20 cotton-swabs per vulvalgesiometer. You will notice that all the vulvalgesiometers require cotton-swabs of specific lengths:

Table 2. Cotton-swab lengths for specific vulvalgesiometers.

Vulvalgesiometer Number(s)	Cotton-Swab Length (mm)
1,3,6	75
2	60
4	90
5,7	53

We *strongly* suggest using these lengths for the following reasons:

1) at maximal compression of the vulvalgesiometer, the plastic part of the vulvalgesiometer will not touch the body area, thereby eliminating the need to sterilize it;
2) more importantly, some vulvalgesiometers exert more force than others, and the cotton-swab must be shorter in these cases to avoid its breaking and resulting in injury.

To insert the cotton-swab into the vulvalgesiometer, hold the white plastic molding with your thumb and index finger and push the cotton-swab as far as it will go into the hole.

To remove the cotton-swab, hold the white plastic molding with your thumb and index finger and pull the cotton-swab out from the hole.

We recommend that the cotton-swabs be lightly coated with a *water-based lubricant* (e.g. KY Jelly, Astroglide) before testing moist genital areas. This reduces the chance of drying out the skin area being tested, which may cause irritation. After testing, it is normal that the skin area tested will be slightly red; this will last about 30 minutes, but because there is no skin piercing with this device, damage to the skin is highly unlikely. For the testing of non-genital regions (e.g. arm), it is not necessary to moisten the cotton-swab.

The vulvalgesiometers have been made specifically for use with Puritan cotton-swabs manufactured by Hardwood Products Company. These cotton-swabs come in bags of 100, and a small box contains 10 bags. You can order them from Fisher Scientific, or directly from Hardwood Products Company (1-800-321-2313; www.hwppuritan.com, reference number 806-WC).

If you require pre-cut cotton-swabs, please contact Caroline Pukall. There will be a charge for this service.

3) Making the Vulvalgesiometer Testing as Comfortable as Possible

We recommend showing the patient the vulvalgesiometers before the procedure starts. A small sample test on an arm to demonstrate what will be happening in the genital region demystifies the procedure and makes the situation less threatening. Reassurance that the pain, if present, will be of low intensity and of short duration will further put the patient at ease.

When testing the vestibule or any other genital site, make sure the patient is lying down on the examining table as comfortably as possible. A pillow for her head and birthing stirrups to support her legs and feet may help.

4) Calibration

All the calibrations for the set/s you have received were done with a Denver Instrument XP-1500 electronic balance, available from Fisher Scientific.

As the vulvalgesiometer is a new device, we are not certain how long the calibrated forces last. We have used the vulvalgesiometers to test approximately 60 women, with application times of 1 – 2 seconds and with repeated stimulations lasting 4 seconds. The vulvalgesiometers were checked for re-calibration at this point but no changes were required.

If you do not have access to calibration tools (e.g. electronic balance with a range from 0 to about 1500g), we suggest contacting Caroline Pukall once you have tested approximately 60-80 patients. She will provide you with a freshly calibrated set in exchange for your used one. There will be an extra charge for this service.

5) Repairs

Should the vulvalgesiometer set break, please contact Caroline Pukall as soon as you can for information and/or replacement parts.

One caution: the clear plastic part of the vulvalgesiometers is made from a syringe, and the way syringes are normally used in a medical setting is the opposite of how they are used in the vulvalgesiometer kit. Do not put the cotton-swab on the end of the vulvalgesiometer marked with the number, but into the white plastic molding that was made specifically for this purpose.

Figure 1. Vulvalgesiometer.

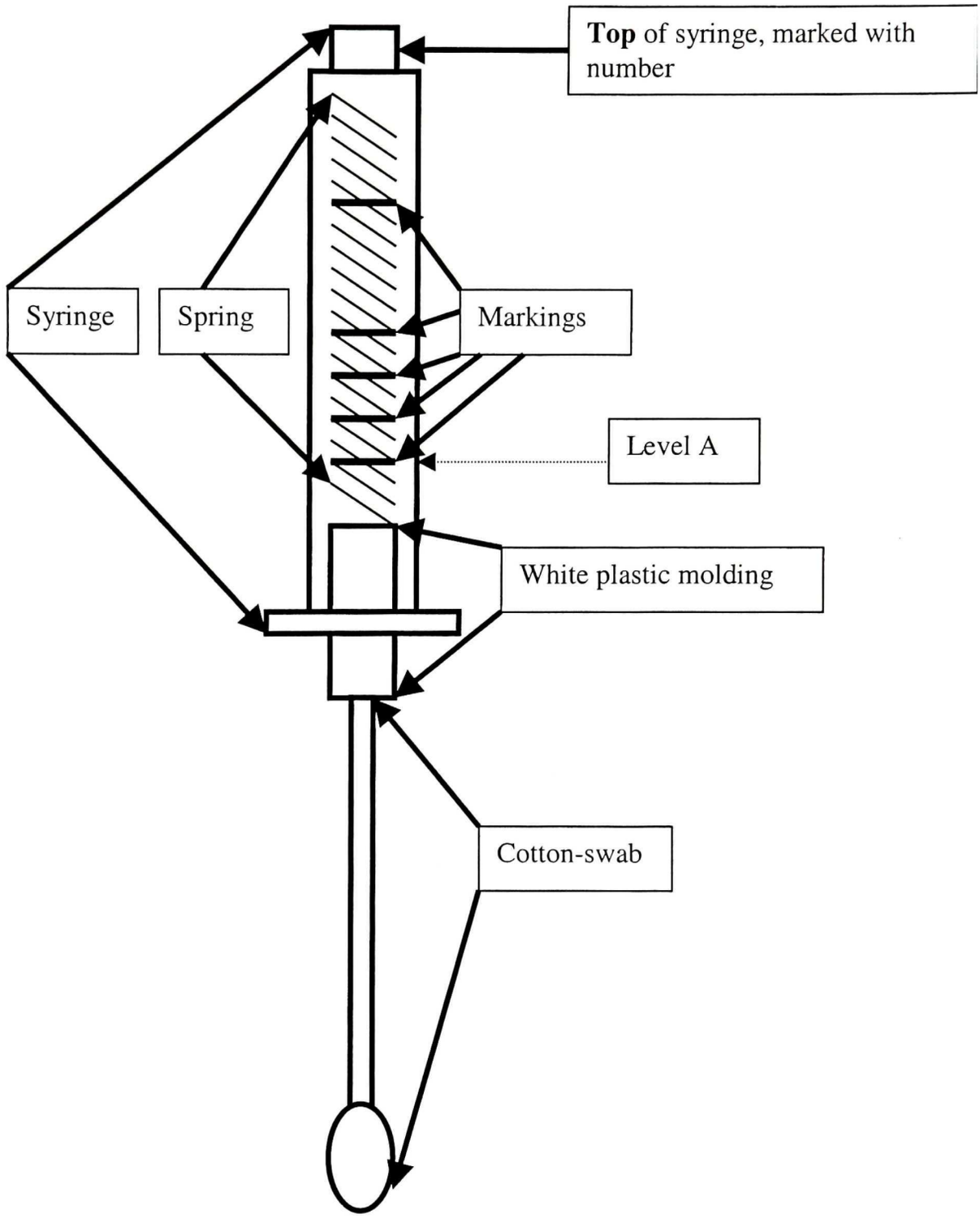
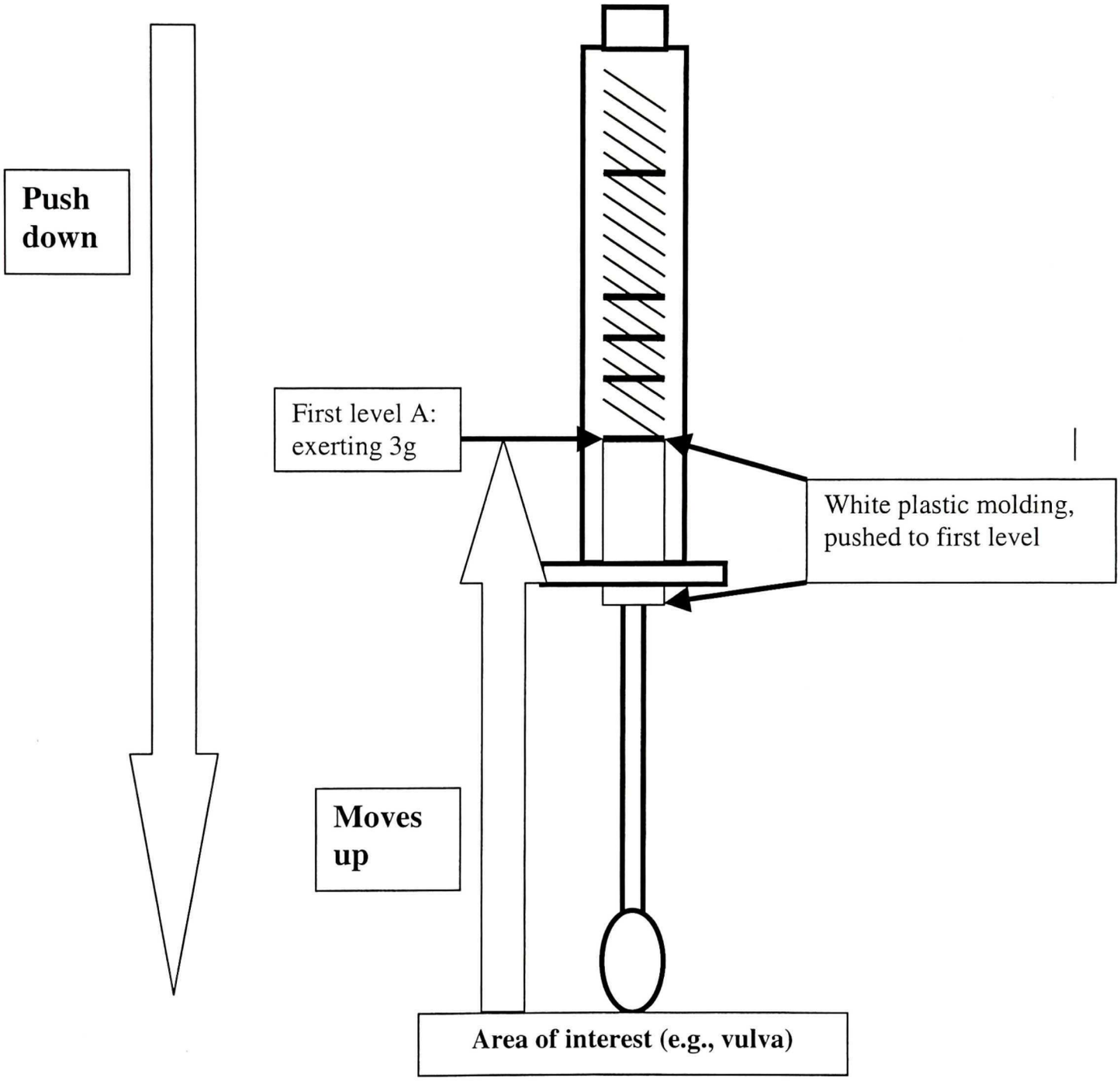


Figure 2. Application of vulvalgesiometer: place it over area of interest and push down until the top of the inner white molding reaches, for example, the first level.



Relevant Citations

Pukall CF, Binik YM, & Khalifé S (submitted). A new instrument and method for pain assessment and diagnosis in vulvar vestibulitis syndrome.

Pukall CF, Payne KA, Binik YM, & Khalifé S (in press, 2003). Pain measurement in vulvodynia. Journal of Sex and Marital Therapy, 29(supp), 111-120.

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Pukall CF, Binik YM, Khalifé S, Abbott FV, Amsel R, & Kao A (November, 2002). Sensory abnormalities in women with vulvar vestibulitis syndrome. Paper presented as part of a symposium at the Society for the Scientific Study of Sexuality (SSSS), Montreal, Quebec, Canada.

Pukall CF, Binik YM, & Khalifé S. (October, 2002). Vulvalgesiometer: A new instrument and method for pain measurement in vulvar vestibulitis syndrome. Paper presented at the International Society for the Study of Women's Sexual Health (ISSWSH), Vancouver, British Columbia.

Pukall CF, Binik YM, Khalifé S, & Amsel R (March, 2002). Measuring the pain in the sexual pain disorders. Paper presented at the 27th annual meeting of the Society for Sex Therapy and Research (SSTAR), Las Vegas, Nevada.

Pukall CF, Binik YM, Khalifé S, Amsel R, & Abbott FV (February, 2002). Vulvar vestibulitis syndrome: Sexual dysfunction or pain disorder? Paper presented at the 30th annual meeting of the North American Society for Psychosocial Obstetrics and Gynecology (NASPOG), Cancun, Mexico.

Pukall CF & Binik YM (October, 2001). Pain measurement in vulvodynia and related conditions. Paper presented at a symposium on vulvar pain at the annual meeting of the Female Sexual Function Forum (FSFF): New Perspectives in the Management of Female Sexual Dysfunction, Boston, MA.