National Vulvodynia Association

NVA News

Volume VIII, Issue I Winter 2002

Causes of Recurrent Vulvovaginal Candidiasis

By Jack D. Sobel, M.D.

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Recurrent vulvovaginal candidiasis (RVVC), commonly referred to as chronic yeast infection, is defined as four or more attacks of symptomatic *Candida* vaginitis in a 12-month period and affects approximately five percent of women during their reproductive years. According to the NVA's self-report survey, symptomatic *Candida* vaginitis often precedes or coexists with a diagnosis of vulvodynia. The natural history of RVVC differs from that of sporadic, uncomplicated Candidal infections, which peak during ages 15-30 and decrease in frequency over the next two decades. In contrast, women with RVVC continue to have symptomatic episodes at the same rate throughout their reproductive years.

Candida albicans species (as opposed to non-albicans) are responsible for most cases of both RVVC and uncomplicated, sporadic *Candida* infections. In women with RVVC, 85 to 95 percent of cases are caused by *Candida albicans*. *Candida glabrata* is the second most common species, accounting for 5 to 10 percent of cases.

Etiology

RVVC is not caused by a single factor and may be idiopathic (of unknown cause) or the result of host (individual) factors or characteristics of the microorganisms. There are two critical phases in the development of *Candida* vaginitis: a) vaginal colonization by *Candida* microorganisms and b) the transformation from asymptomatic colonization to symptomatic *Candida* vaginitis. There are distinct risk factors for colonization, as well as for transformation from the asymptomatic to the symptomatic vaginitis phase.

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Physical Therapy Treatment of Vulvodynia

By Talli Y. Rosenbaum, P.T.

Talli Y. Rosenbaum is a licensed physical therapist specializing in urogynecological and pelvic floor rehabilitation in Tel Aviv, Israel. She is a member of the International Society for the Study of Women's Health and the International Pelvic Pain Association.

In the past, women who complained of pain with intercourse and did not present with obvious physical signs of infection or disease, were given the diagnosis of "dyspareunia" meaning "pain with intercourse." Dyspareunia is classified in the psychiatric diagnostic manual (DSM-IV) as a "sexual pain disorder." In recent years, as the medical community has become more involved in evaluation and treatment of dyspareunia, it has been suggested that "sexual pain disorders" be reclassified as "pain conditions that interfere with sexual activity." A woman suffering from dyspareunia secondary to vulvodynia, for example, usually experiences other limitations that affect quality of life. In addition to having difficulty inserting a

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Women prone to RVVC exhibit a higher frequency of vaginal colonization by *Candida* species. It is important to understand normal "host" defenses in the vagina directed at preventing *Candida* vaginitis. Firstly, *Candida* microorganisms gain access to the vagina in a variety of ways, most importantly by local spread from contiguous sites, i.e., the perineal area and gastrointestinal tract. Other sources may include digital introduction, or possibly orogenital sexual transmission. Regardless of the route of introduction, the genital tract in women of reproductive age is highly conducive to yeast colonization, initial growth and persistence. Estrogen presence is crucial in persistent *Candida* colonization of the vagina. Women who are pregnant, sexually active or diabetic are especially susceptible. Other factors that increase susceptibility are local application of steroids, estrogen, and topical antibiotics. Hence, the majority, if not all women, eventually became colonized with a low level of *Candida* species that does not necessarily cause symptoms.

Because data is sparse, one can only speculate as to which innate or acquired defense mechanisms function to maintain an asymptomatic state. Possible defense mechanisms include: (1) protective lactobacillus-dominated vaginal flora (2) local immunoglobulins in cervical and vaginal secretions (3) anti-inflammatory cytokines (substances) (4) vaginal epithelial cell derived factors that inhibit *Candida* growth. These protective factors are thought to act in concert providing a vaginal environment that suppresses yeast proliferation. Understanding this "protected state" is crucial in searches for new therapeutic strategies. Implicit in this concept is the recognition that asymptomatic, colonized women are not "sensitized" to *Candida* present in the vagina and do not overreact and cause symptoms, ie, the local immune system of the lower genital tract is generally able to "tolerate" a variety of foreign antigens, including *Candida* antigens. Symptomatic vaginitis occurs when *Candida* microorganisms or the vaginal environment changes creating a climate hospitable to the proliferation of *Candida*.

Secondary RVVC

Considerable progress has been made in identifying the secondary causes of RVVC. Women with RVVC, as opposed to sporadic vaginitis, constitute a special subpopulation which, for a variety of factors, is predisposed to repeated symptomatic episodes. These factors may include changes in the *Candida* microorganisms (microbial factors) or the host.

Microbial factors

Approximately 90 percent of women with RVVC are infected with strains of *C. albicans*. Moreover, studies have shown that these strains are highly susceptible to all available topical and systemic azole agents, e.g., fluconazole (Diflucan). However, even long-term maintenance azole treatment, while effectively keeping symptoms under control

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NVA News
National Vulvodynia Association
P.O. Box 4491, Silver Spring, Md. 20914-4491
(301) 299-0775; FAX: (301) 299-3999
www.nva.org

The *NVA News* is published three times per year.

Editor:
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Layout: Andrea Hall **Contributor:** Christin Veasley

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and resulting in negative cultures, fails to eliminate low numbers of *Candida albicans* microorganisms. This persistent existence of small numbers of *Candida albicans* microorganisms sets the stage for subsequent episodes of symptomatic vaginitis. Persistence of organisms in the vagina is by no means universal, and under the pressure of chronic administration of fluconazole for six months, occurs in approximately 50 percent of women with recurrent *Candida* vaginitis. The fact that these organisms persist in some women and not others suggests either unique vaginal environmental factors or microbial characteristics that allow *Candida* to adapt to the continual azole pressure. Most of the time, recurrent vaginitis episodes are caused by the identical strain of highly sensitive *C. albicans* responsible for the previous episodes.

The second most frequently encountered *Candida* species isolated from women with recurrent *Candida* vaginitis and most difficult to eradicate or control is *Candida glabrata*. This type of *Candida* is much less susceptible to the azole agents than albicans and requires treatment with non-azole antifungal agents.

Host Factors

Increased susceptibility to RVVC has been associated with: 1) poorly controlled diabetes; 2) dietary factors such as excessive refined sugar intake; 3) estrogen presence; 4) systemic or local vaginal antibiotics; 5) vulvar dermatoses such as lichen sclerosus and eczema; 6) systemic immunodeficiency disorders such as lupus; and 7) systemic therapy with corticosteroids.

Both externally administered and natural estrogen are risk factors for the development of RVVC; consequently, the risk decreases in post-menopausal women. Estrogen hormone replacement therapy (HRT) is a contributing factor to RVVC, but usually only in women prone to the condition. In particular, the combination of HRT and antibiotics may cause RVVC in post-menopausal women. Local vaginal estrogen administration is even more likely to contribute to RVVC, especially in the form of the estrogen ring. Oral contraceptives (OC) are also a suspected risk factor, but epidemiological data is inconsistent. Apparently, discontinuing OC use in women prone to RVCC rarely adds any benefit. Little is known about the effect of the newer generation of low-estrogen OCs.

Both systemic and local vaginal antibiotics are major risk factors for RVVC. Nevertheless, the majority of women receiving antibiotics by either route do not develop RVVC. There is a subpopulation of women, however, who are uniquely-at-risk for developing antibiotic-induced RVVC. These women, who only develop the condition following antibiotic administration, have chronically low numbers of *Candida* organisms that lead to symptomatic vulvovaginitis in response to changes in the vaginal flora, most likely the lactobacilli.

Virtually all vulvar dermatoses, but most frequently lichen sclerosus, eczema and atopic dermatitis increase *Candida* colonization and the risk of symptomatic vulvovaginitis. Symptoms of RVVC are similar to those of associated dermatoses, therefore the existence of either condition may be missed. Topical steroid therapy, a common treatment for dermatosis, is also a contributing risk factor to RVCC.

Primary RVVC

In about 50 percent of women with RVVC, none of the above-mentioned risk and contributory factors are present. Monogamous women, otherwise entirely healthy, become symptomatic in the absence of any recognizable precipitating factors. The pathology underlying primary or "idiopathic" RVVC remains unexplained. Relapses indicate persistence of *Candida* microorganisms in the vagina. While sexual transmission may be an important factor in some patients, for most patients increased *Candida* colonization is idiosyncratic and not the result of re-infection. There are a number of hypotheses which attempt to explain this phenomenon.

One possibility is that increased colonization results from a drug-resistant strain of *Candida*. This has not yet been proven in laboratory studies, but

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continues to be investigated. Another hypothesis is that some women have a genetic predisposition that results in a favorable vaginal environment for RVVC. The most likely genetic factors would be those affecting the adhesion of *Candida* microorganisms to the vaginal mucosa. Another possibility is that a favorable vaginal environment results from a high concentration of natural estrogen. Some clinicians have speculated that women with high estrogen levels have reduced bacterial resistance to *Candida* and have suggested that these patients increase their yogurt intake. However, several studies fail to support this hypothesis, i.e., they have not shown a lack of lactobacilli ("good" bacteria) in women with primary RVCC.

While diabetes, primarily when poorly controlled, predisposes to colonization and vaginitis, it has long been postulated that pre-diabetes or latent, chemical diabetes could predispose to RVVC. Data supporting this hypothesis has not been forthcoming, but significantly higher blood sugar levels have been documented in some women with RVVC. Anecdotal evidence supports this finding, with some women reporting that dietary excesses of refined sugar seem to precipitate attacks of primary RVVC.

Finally, some researchers hypothesize that women with primary RVVC have an immunodeficiency localized in the vagina, i.e., an abnormal response to the *Candida* antigen (substance that causes formation of an antibody). It is thought to be a local immunodeficiency because studies have shown that these women do not suffer from recurrent *Candida* attacks anywhere else on the body. According to this hypothesis, the normal tolerance of the vaginal mucosa for *Candida* colonization is lost. Re-exposure of the vagina to *Candida* antigen results in an immediate hypersensitivity reaction, including the development of vulvovaginal symptoms such as itching, swelling and redness. This abnormality, however, has not consistently been found in women with RVVC.

Conclusion

In the past decade, there has been considerable progress in clarifying risk factors of secondary RVVC, but limited progress has been made in identifying causes of primary RVVC. To date, therapy for both groups consists of long-term fluconazole therapy, sometimes required for years. Current research on possible immunological factors involved in RVVC may lead to the development of more effective treatment.

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Additions to NVA Medical Advisory Board

In 2002, the NVA welcomed Drs. Elizabeth Stewart and Jerome Weiss to its medical advisory board. Dr. Stewart is director of the Stewart-Forbes Vulvovaginal Specialty Service at Harvard Vanguard Medical Associates, a multi-specialty medical group in Boston. She is an assistant professor of obstetrics and gynecology at Harvard Medical School, a fellow of the American College of Obstetrics and Gynecology and a member of the International Society for the Study of Vulvovaginal Disease. Dr. Stewart is a co-investigator on the five-year vulvodynia prevalence study funded by NIH in 2000. She is the author of *The V Book*, a comprehensive guide to vulvovaginal health.

Dr. Jerome Weiss is director of the Pacific Center for Pelvic Pain and Dysfunction in San Francisco, California. He is an associate clinical professor of urology at the University of California, San Francisco (UCSF). His practice is dedicated to the treatment of pelvic pain problems secondary to myofascial dysfunction, including vulvodynia, interstitial cystitis and urinary urgency/frequency syndrome. Dr. Weiss is currently the President of the International Pelvic Pain Society and a member of the International Association for the Study of Pain, the American Pain Society and the American Urological Association. ■

Harvard Highlights Vulvovaginal Disorders

In October 2002, a continuing education course on vulvovaginal disorders entitled, "Vulvar Disease, Vaginitis, and Vulvodynia," was held at Harvard Medical School. The course was designed to educate health care practitioners about the diagnosis and treatment of vulvovaginal disorders not covered in medical school curricula. "Countless women in America suffer from undiagnosed lower genital symptoms, feel desperation that no one can help them and endure ongoing vulvar pain and painful intercourse," said course chair Elizabeth Gunther Stewart, MD, assistant professor of obstetrics and gynecology at Harvard Medical School and NVA medical advisory board member. The one-day symposium covered multiple vulvovaginal health issues including bacterial and fungal infections, vulvar skin dermatoses, human papillomavirus (HPV) and chronic vulvar pain.

Bernard Harlow, PhD, associate professor of obstetrics, gynecology & reproductive epidemiology at Harvard Medical School, presented preliminary data from his ongoing NIH-funded vulvodynia prevalence study. To date, he has analyzed surveys of over 3,300 women between the ages of 18 and 59, from different socio-economic sectors in Boston, Massachusetts. Almost 16 percent of respondents reported a history of lower genital tract discomfort that persisted for more than three months. Approximately 12 percent of respondents reported symptoms consistent with a diagnosis of vulvar vestibulitis, i.e., pain on contact during tampon insertion, sexual intercourse or pelvic examinations. More than three percent of respondents reported burning or knife-like pain, symptoms consistent with a diagnosis of dysesthetic vulvodynia.

David Foster, MD, associate professor at University of Rochester Medical Center and NVA medical advisory board member, gave two presentations on chronic vulvar pain conditions. He pointed out that the medical community has not yet formulated an acceptable classification system for these disorders and presented a working model that categorizes chronic vulvar pain as "primary" or "secondary." A "primary" classification applies to cases without identifiable cause, i.e., the patient does not have a pre-existing condition that causes vulvar pain; a "secondary" classification applies to cases in which there is an identifiable cause such as chronic infection. Foster's second presentation covered the diagnosis and possible causes of vulvar vestibulitis, as well as medical and surgical treatment options for the condition.

Stewart discussed the top 10 traps in diagnosing vulvovaginal complaints, noting that their evaluation is complicated and misdiagnosis is common. She emphasized that patients presenting with vulvovaginal symptoms should receive a thorough evaluation before treatment is prescribed, and critiqued health care professionals who assume it can't do any harm to prescribe an antibiotic or anti-fungal medication in the absence of a confirmed diagnosis. (Antibiotics can promote the growth of Candida (yeast), anti-fungals can delay diagnosis if the condition is not Candida, and ingredients in topical preparations can promote vulvar sensitization.)

Diana Parks Forbes, MSN, RNP, of Stewart-Forbes Vulvovaginal Specialty Service at Harvard Vanguard Associates, discussed the effect of chronic vulvar pain on a woman's sexuality. She summarized the four major categories of female sexual dysfunction, one of which includes sexual pain disorders such as dyspareunia (painful sexual intercourse). Forbes, emphasizing the importance of providing comprehensive care, presented sample questions clinicians can use to assess vulvodynia patients' level of sexual functioning. She also encouraged clinicians to advise vulvar pain patients who experience painful sexual intercourse to explore alternative forms of sexual intimacy.

"There was standing room only available at this course, says Dr. Stewart, adding that, "it clearly demonstrates the increased need for quality educational programming at all levels within the medical community."

(Editor's Note: On April 14th and 15th 2003, the National Institute of Child Health and Human Development in Bethesda, Maryland, will hold a two-day symposium for medical professionals on the current state of vulvodynia research. Please check the NVA website, www.nva.org, for information on registration.) ■

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tampon and undergoing a gynecological exam, she may not be able to sit for prolonged periods, which may impact her ability to function in the workplace. More often than not, dyspareunia is related to an existing condition such as vulvodynia or vulvar vestibulitis, and may co-exist with pain syndromes associated with vulvodynia such as interstitial cystitis and chronic pelvic pain. Furthermore, there are other medical and musculoskeletal conditions that cause chronic pain, and limit mobility and fitness, which may affect one's ability to engage in comfortable sexual activity.

Clearly, a team approach to the treatment of dyspareunia is critical. The traditional interdisciplinary model suggested in the literature includes the family physician, urologist, gynecologist, pain specialist and sex or marital therapist. While pelvic floor biofeedback, a critical tool available to physical therapists, has demonstrated efficacy, literature reporting on the contribution that can be made by a urogynecological physical therapist using other modalities has been limited. In a recent retrospective study evaluating physical therapy's effect on pain during sexual intercourse, over 51 percent of participants reported complete or significant reduction of pain and 20 percent reported moderate improvement. However, there have not been any controlled studies documenting the efficacy of physical therapy in the treatment of vulvar pain syndromes, and no standard protocol has been suggested.

The lack of a standardized treatment protocol most likely stems from what physical therapists have known for decades, i.e., that no two patients are alike and no single protocol will be suitable for all patients. Physical therapists are trained to regard each patient uniquely and holistically, determining an appropriate course of treatment with each patient through a comprehensive evaluation. This evaluation consists of taking a thorough history, observing posture, strength, mobility, endurance and tissue integrity; assessing function; and providing an individualized program combining suitable exercises and appropriate hands-on techniques.

History

Taking a thorough history provides the patient with an opportunity to describe her symptoms and discuss her main difficulties. The questions asked should relate to the patient's main complaints; her medical, gynecological and sexual history; and her daily activities including work, home and exercise routine, diet, and medications. The physical therapist should also ask about urinary function, as vulvar pain patients often present with urinary frequency, urgency or even incontinence. Questions about sexual history are asked in order to assess general sexual function and identify difficulties in the area of desire, arousal and orgasm. While certain questions are standard, the history-taking evolves differently for each patient, and often the patient herself finds the experience enlightening, discovering patterns and connections she never realized before. The history taking also provides the patient with an opportunity to have her vulvovaginal symptoms taken seriously, possibly for the very first time.

Evaluation

The physical therapy exam should assess the patient's posture, mobility, and strength, as well as her movements and breathing, in order to get a sense of how she uses her body. Particular attention should be paid to the pelvic area. In order to assess areas of tightness and decreased mobility, it is important for the physical therapist to lay his or her hands on various areas of the body including the thoracic diaphragm, rib cage, and pelvic area. The viscera (abdominal and pelvic organs) should be evaluated to note tight or hypomobile areas, or what is referred to as torsion, a problem of alignment or position. The spine, sacrum and pelvis are also checked for areas of too much or too little mobility, misalignment, or imbalance. Muscles, particularly of the pelvis, abdominals, and legs, are assessed for length, strength, and presence of trigger points. A trigger point is a hyperirritable spot, usually within a muscle, that is painful on compression and can refer pain to different areas. Often these points are found in the internal muscles of the vagina and the pelvic floor, buttocks, and hips.

An important part of the physical therapist's examination is the vulvar and pelvic floor assessment. The vulva is observed for areas of redness, raised areas, or edema, and is palpated to note areas of tenderness. The vagina and perineum is checked and palpated for

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tender areas, and in the case of women who have given birth or had surgery, areas of tenderness caused by scar tissues from surgical or episiotomy stitches are examined. The timing and method of the internal exam is determined based on the patient's history. In most cases, an internal exam using one finger can be done on the first visit. For those who have never inserted a tampon or had intercourse, or who otherwise display anxiety about such an exam, treatment focuses on preparing the patient to undergo this exam in the future.

The internal exam allows the therapist to assess pelvic floor muscle tension and tightness, tone, range of motion and muscle strength. For the purpose of accuracy and objective reporting, muscle strength and resting tone should also be measured using the EMG biofeedback technology. This exam also enables the therapist to assess internal muscle trigger points, the integrity of the pelvic organs and the presence of bladder, uterus, or rectal prolapse. If the history warrants it, i.e., the patient reports anal pain or constipation, an anorectal internal exam should be performed as well.

Treatment

It is important for the physical therapist to listen to the patient's goals in designing a treatment plan. Discussing these goals is critical in determining the focus and type of treatment. For example, the treatment goal for vestibulitis patients is typically pain-free intercourse, whereas patients who suffer from constant vulvar pain primarily seek pain relief. Although some well-intentioned physical therapists may see themselves as "healers" and patients as passive recipients of treatment, the best approach to managing vulvar pain is a cooperative one in which patient and therapist work together.

Based on the initial examination, the therapist provides the patient with various home exercises and a home treatment regime, which may include stretching, inserting a finger into the vagina, applying pure Vitamin E to the vulva, or bathing with certain oils, e.g., tea tree oil. Daily application of the oil using direct touch to the perineum and vestibule is intended to decrease hypersensitivity of the area and increase tolerance to touch. Histologic studies have determined that there is a proliferation of mast cells (cells that respond to inflammation) and nociceptors (pain receptors) in vulvar tissue of vestibulitis patients. The application of light touch, plus the gradual addition of other touch sensations such as light vibration, provides sensory integration and decreases tactile hypersensitivity by "overriding" messages of pain nerve fibers with those of touch nerve fibers.

Often, the patient is taught breathing and relaxation techniques to perform at home. Some patients with urinary problems, such as urgency and frequency, may be instructed to keep a "bladder diary" and are encouraged to urinate at less frequent intervals. Patients who cannot undergo the vaginal internal exam may be instructed in using a finger or small dilator to gently stretch the vaginal opening. Typically, dilators of increasing width are gradually introduced and the patient continues to work with them at home until the largest dilator can be inserted without pain. In many cases, treatment focuses not only on pain relief, but on helping to reduce the anxiety associated with penetration; this may be achieved with hands-on assistance and involves anatomy identification, instruction in muscle relaxation, and insertion of the dilators.

Therapeutic Exercise

The home exercises recommended by the therapist generally include deep breathing, stretching, and strengthening exercises, particularly of the trunk and pelvis. These exercises are designed to provide optimal balance, stability, strength and mobility, particularly in the region of the lower back and pelvis. Patients are also instructed in how to perform pelvic floor exercises properly and in accordance with specific needs, based on whether muscles are weak, unstable, or hyper or hypotonic.

Hands-on treatment techniques

Manual therapy techniques are very effective in improving muscle and connective tissue mobility, mobilizing tight fascia and viscera, mobilizing joints, and providing relaxation. Physical therapists tend to be eclectic, often incorporating skills gleaned from advanced courses in alternative techniques such as reflexology or cranio-sacral therapy. However, basic manual techniques in the treatment of vulvovaginal

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pain syndromes should include myofascial release, visceral manipulation and external and internal trigger point muscle massage. Myofascial release is a very effective hands-on technique that provides sustained pressure into myofascial restrictions to eliminate pain and restore motion. Visceral manipulation was developed by French osteopath Jean Pierre Barral over 20 years ago. It is a therapeutic approach to relieving abnormal tissue tensions of and around the organs, thereby promoting and improving organ function. Trigger point therapy is a bodywork technique that involves the application of local pressure to tender muscle tissue in order to relieve referred pain and dysfunction.

Modalities/equipment

The most important tool available for assessment and treatment purposes is pelvic floor electromyography (EMG), a biofeedback instrument that measures muscle activity. Other modalities available to physical therapists include heat/cold application, ultrasound and electrical stimulation. Ultrasound, a method of deep heat used in the treatment of muscle, joint and tissue pain, is effective in promoting healing and breaking down adhesive tissue, and is an appropriate modality to use for a woman with intercourse pain secondary to an extensive perineal repair. Transcutaneous electrical nerve stimulation (TENS) has been used effectively for the purpose of decreasing pain as has electrical muscle stimulation for assisting in muscle strengthening. Electrical stimulation has also shown efficacy in reducing symptoms of urinary urgency and frequency by relaxing bladder contractions.

Managing vulvar pain with physical therapy requires applying the principles of musculoskeletal assessment and treatment to the pelvic and vulvar areas. It is wise to seek a skilled and experienced therapist, with knowledge in the areas of women's sexual health and urogynecology, to complement the health care team involved in treating vulvodynia.

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Thank You Johnson & Johnson!

The NVA gratefully acknowledges Johnson & Johnson's generosity in renewing its grant to support NVA's educational programs for patients and health care professionals. We would especially like to express our appreciation to Dr. Brinda Wiita, Director of Clinical Affairs, Personal Products Company (a division of Johnson & Johnson), for her encouragement and commitment to the NVA's goals.

Oral Contraceptives Linked to Vestibulitis?

By Kathleen Nelson

Kathleen Nelson studied health policy at Johns Hopkins University and writes articles on science and medicine. She lives in New York City.

Use of oral contraceptive (OC) pills may increase the risk of developing vulvar vestibulitis, according to an article published in the August 2002 issue of the American Journal of Epidemiology. This risk appears to increase the earlier in her life a woman begins using the pill and the longer she takes it, reports lead author Céline Bouchard, M.D., a gynecologist at the University of Quebec in Canada.

"We have an increase in pill use and an increase in vulvar vestibulitis all over the world," says Bouchard, "and we start pills very young." Her study found that women who used OCs at some time in their lives were almost seven times more likely to develop vulvar vestibulitis (characterized by pain at the entrance to the vagina) and that those who began using the pill before age 16 were at a nine-fold risk of the disease. Longer duration of OC use was also predictive of the condition.

"This study shows the urgent need for more research," says Ursula Wesselmann, M.D., a neurologist studying vulvar vestibulitis at Johns Hopkins University and NVA medical advisory board member. "Women should know if there's a risk involved in taking OCs. They need to know which type of pill is least likely to cause symptoms, or if they have vulvar vestibulitis, whether they should stop taking an OC now or change to a different one" she says.

Oral contraceptive pills contain combinations of the steroid hormones, estrogen and progestogen. Today, all OCs have similar amounts of estrogen, but its potency is mitigated or heightened by the amount of progestogen added, says Bouchard. Previous generation OCs that had higher estrogen content were associated with heart attack and thrombosis, leading manufacturers to decrease the estrogen content. Based on her results, Bouchard questions whether this change was the best choice for the vulvar vestibule. In her study, women who used low estrogen/high progestogen OCs had a higher risk of vestibulitis than women who took high estrogen/low progestogen pills. This finding, however, was based on a very small sample because few women used only one type of pill. For this reason, the study needs to be replicated on a larger scale, says its author.

Bouchard hypothesizes that OC use may be linked to vestibulitis in two ways. One possibility is that the OC hormones interact directly with hormone receptors in the vulvar skin, causing irritation and inflammation. Another possibility is that OC use leads to an increase in levels of pro-inflammatory cytokines, inflammation-causing substances produced by immune cells. OC hormones may increase certain cytokine levels in vestibular tissue, causing skin inflammation and pain.

Because the average age of study participants was 22, questions about long-term pill use remain unanswered. "We don't know if it's the initial exposure to a certain type of oral contraceptive that results in vulvar vestibulitis, or if it results from the continued use of OCs," says Wesselmann.

Given her study's findings, Bouchard acknowledges that doctors face a predicament in advising women about OCs, especially women who currently suffer from vulvar vestibulitis. David Foster, M.D., gynecologist at the University of Rochester Medical Center and NVA medical advisory board member, thinks that the possibility of a relationship between OC hormones and vestibulitis requires further investigation. "I wouldn't recommend that women change their OC use based on a single study," he says. Furthermore, Foster emphasizes the need for research on hormones' effects on the spinal cord and brain, which are also involved in pain perception. "Some hormones may stimulate pain and some may be beneficial and inhibitory; it's not totally clear," he says.

It is clear, however, that the OC pill is not linked to all cases of vulvar vestibulitis, and some women develop the condition before, or independent of, its use. Bouchard suggests that physicians prescribing the pill to adolescents, especially for non-contraceptive use such as control of acne or regulation of menstruation, should think twice. "Perhaps we use the pill too often, and on those too young," she says.

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Vulvar Vestibulitis Featured in NYC Play

Tara Greenway, a New York actress, wrote and performed in an off-Broadway production of her one-woman play entitled *Missionary Position*. The play deals with the relationship between sexuality and spirituality, as well a woman's struggle to free herself from the pain of vaginismus and vulvar vestibulitis. *Missionary Postion,* first produced in 1998 at an off-off-Broadway theatre, opened for an off-Broadway run at the Grove Street theatre in 1999. In a New York Times review of the one-woman 27 character show, directed by Ariane Brandt, critic Anita Gates described it as "a bumpy ride with nice sights along the way."

Tara also performed staged readings of her play at the 2000 national conference of the Society of Sex Therapists and Researchers, and at a medical conference held at Robert Wood Johnson Medical School, Rutgers University, in January 2003. If you would like a bound transcript of *Missionary Position* ($15 cost), please contact Tara at tarajoy@earthlink.net. ■

NVA Funds Study on Dysesthetic Vulvodynia

In September 2002, the NVA awarded a grant to Ursula Wesselmann, M.D., neurologist and pain researcher at Johns Hopkins University School of Medicine. The aim of her pilot study is to examine sensory mechanisms contributing to dysesthetic vulvodynia in post-menopausal women and to determine how these sensory mechanisms are affected by hormone replacement therapy. To date, there have been almost no studies on dysesthetic vulvodynia in post-menopausal women. Wesselmann's study will make important contributions to the understanding of vulvodynia as a function of aging and change in reproductive hormone status. Hopefully, the results of this research will enable women with vulvar pain syndromes to make an educated decision about hormone replacement therapy. ■

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(Editor's Note: Dr. Sobel adapted this article from Sobel, JD Pathogenesis of Recurrent Vulvovaginal Candidiasis. Current Infectious Disease Reports *2002; 4:514-19.)* ■

Research Participants Needed

Married Women with Vulvodynia/Vulvar Vestibulitis Needed for Study

Help us learn more about the impact of vulvar pain conditions on women and their relationships. Study requires only one hour during which you and your spouse will be asked to fill out surveys. All results are completely confidential. You must have a current diagnosis of vulvodynia or vulvar vestibulitis, be between 20 and 50 years of age, and be in a marital relationship to qualify. No financial cost or payment to you is associated with participation in this study.

For more information, please contact:
Susan Theve-Gibbons, MS, PT
Doctoral candidate, University of Connecticut
Family Studies Program
860-768-4851 or Gibbons@hartford.edu

Efficacy of Cromolyn Cream on Vulvar Pain Urology Clinics of NE Florida (Orange Park)

Requirements: You must have a current diagnosis of vulvodynia or have experienced vulvar pain for at least six months. Candidates must be between the ages of 18 to 80 years and not have any other pelvic pain syndrome.

Participation will include three office visits within a 6-week time frame to begin in February 2003. All results are completely confidential. No financial cost or payment to you is associated with participation in the study.

For more information, please contact:
Maggie Coffman, ARNP
904-264-8418

Vulvodynia Research at Yale University

Researchers at the Yale University School of Medicine are seeking women who suffer from vestibulitis or dysesthetic vulvodynia to participate in an NIH-funded study. This is a chronic pain management study that involves a multidisciplinary assessment and 10 treatment sessions over a 10-week period. There is no cost to participants and all information is kept strictly confidential. The principal investigator is Dr. Robin Masheb.

For more information, contact Christine at 203-785-5425. ■

NVA Disseminates Educational CD

In an effort to raise the medical community's awareness of chronic vulvar pain disorders, NVA's director of professional programs, Chris Veasley, in collaboration with Drs. Stanley Marinoff and Libby Edwards, created a teaching CD containing a PowerPoint presentation, a self-help tips patient handout and a comprehensive reference list. The NVA would like to thank **Lee Jones, President & CEO of Inlet Medical, Inc.,** for her continued support in sponsoring the mailing of this CD to Residency Program Directors and Chairs at 300 medical institutions in the United States and Canada. The NVA is also grateful to volunteers Debby Herbenick, a graduate student at Indiana University and creator of vulvarhealth.org, and Paige Fortinsky, an undergraduate student at Columbia University, for their exceptional assistance with this program. If you are interested in obtaining a copy of the CD ($30 cost), you can order it on our website, www.nva.org, or contact Rosemary at rose@nva.org or 703-777-3074. ■

THE NVA NEEDS YOUR CONTRIBUTION

I WANT TO SUPPORT THE NVA AND RECEIVE MORE INFORMATION ON VULVODYNIA.

Name _____

Address _____

_____

Phone (H) _____ **(O)** _____

E-Mail Address _____

The NVA needs the support of everyone: patients, families, and health care providers.

☐**$40** ☐**$60** ☐**$100** ☐**Other $** _____

☐**$60 Health Care Professional**

☐**Yes, I would like to be contacted by other NVA supporters in my area.**

☐**No, I do not want to be contacted. Please keep my name confidential.**

Please send your check or money order, payable to NVA, together with your name, address and telephone number to: NVA, P.O. Box 4491, Silver Spring, Md. 20914-4491.

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NATIONAL VULVODYNIA ASSOCIATION

P.O. Box 4491 ❖ Silver Spring, MD 20914-4491