National Vulvodynia Association

NVA News

Volume XIV, Issue III Winter 2009

# Urogenital Infection and Allergy: Risk Factors?

***By Ruby Nguyen, PhD***

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The causes of vulvodynia are virtually unknown. In 2006, an expert panel convened by the Office of Research on Women's Health at the National Institutes of Health identified inflammatory mechanisms, among other factors, as a contributor to vulvodynia. We sought to examine the hypothesis that a heightened immuno-inflammatory response is associated with vulvodynia, using data that we had previously collected. Since we were unable to investigate specific inflammatory markers, we relied on a history of urogenital tract infection and atopy (commonly referred to as allergy) as markers of the immune response. From our data, we assessed whether a woman had a history of either condition prior to vulvar pain onset and we presented our results in two recent journal articles. (Nguyen, 2009; Harlow, 2009)

**BACKGROUND: Urogenital Tract Infection**

Cauci (2007) reported that immune responses are magnified when multiple urogenital tract infections are present. It should be noted that, in addition to sexually transmitted diseases, yeast or urinary tract infections (UTIs) provoke an immune response. There is some literature to support the association between urinary tract or yeast infection and vulvodynia. Arnold and colleagues (2007) reported that women with vulvodynia were significantly more likely to have had multiple UTIs and yeast infections (more than three per year) than non-affected women. This study did not shed light on whether they are a

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# Vulvodynia Prevalence over the Lifespan

Once considered a rare disorder affecting primarily Caucasian women, several recent epidemiological studies indicate that vulvodynia is highly prevalent, affecting women of all age groups and ethnicities. The key findings of these studies are summarized below.

**Reproductive Years**

Population-based studies that include a clinical confirmation component have found that three to seven percent of reproductive-aged women suffer from chronic vulvar pain. NVA medical advisory board member Bernard Harlow, PhD, surveyed 3,358 women, aged 18 to 84, from five diverse ethnic and socio-economic communities in Massachusetts; he found that, at some point in their lives, almost 16 percent reported a history of chronic burning, knifelike or sharp pain, or pain on contact that lasted three months or longer. Seven percent were experiencing symptoms at the time of the survey; 80 percent of

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risk factor for vulvodynia, however, because it did not assess whether the history of urogenital infections occurred prior to vulvar pain onset. Recent studies have shown that other vaginal infections may lead to an immuno-inflammatory response. Fichorova's research (2004, 2006) demonstrated that common genital tract infections, such as bacterial vaginosis and trichomoniasis, may produce cytokines, substances involved in the immune response that promote inflammation. These studies found that cytokines Interleukin (IL)–6, IL-8 and tumor necrosis factor-alpha were released in response to vaginal infection.

In support of a possible connection between inflammation and vulvodynia, Gerber (2002, 2003) and Jeremias (2000) found that women with vulvodynia had (i) lower blood levels of IL-1 receptor antagonist and (ii) polymorphisms (alterations) in genes that code for IL-1beta and IL-1 receptor antagonist. These findings support the theory that women with vulvodynia may not be able to effectively terminate an acute inflammatory response, thereby leading to a chronic inflammatory state.

**Allergic Conditions**

Until recently, there has been almost no literature on the possible association between allergic reactions and vulvodynia. Bornstein's study (2004) comparing vestibular tissue of patients with Provoked Vestibulodynia (PVD/aka vulvar vestibulitis) and controls found that the former had an increased number and activity of mast cells, as well as increased nerve fiber density in the subepithelial vestibular tissue. (Mast cells release histamine and contribute to the production of cytokines during chronic inflammation.) He hypothesized that C-fiber nociceptors (pain receptors), which can be sensitized by excessive histamine reactions, may be one neuronal pathway via which women experience vulvodynia.

**STUDY PARTICIPANTS**

Women between the ages of 18 and 64 were identified using Massachusetts census publications and considered eligible to participate in the case-control study. By using the Massachusetts Town Books, we were able to contact women of different ethnicities and socioeconomic groups, which is critical for this type of study. Assessment of a diverse population is especially difficult when you are studying a stigmatizing condition such as vulvodynia, which many women do not feel comfortable discussing, even with their doctors.

Our survey identified 18,503 women, 12,435 of whom completed an initial questionnaire that assessed whether they had experienced chronic vulvar

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***NVA News***
**National Vulvodynia Association**
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*NVA News* is published three times per year.

**Editor:**
Phyllis Mate

**Contributor:** Chris Veasley **Layout:** Andrea Hall

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pain lasting three months or longer. To be eligible for our study, women's pain could have presented as burning, knife-like or sharp pain, or pain on contact, e.g., during intercourse, tampon insertion or a pelvic exam. Before we classified women reporting current vulvar pain as having vulvodynia, we conducted a telephone interview to assess whether their symptoms might be due to another condition. The main categories for exclusion included: active sexually transmitted infections; yeast or bacterial infections; vulvar skin conditions; other pelvic disorders; painful sex related to reduced estrogen level; or inflammatory vaginitis. Nearly 70 percent of women reporting current vulvar pain agreed to participate in the telephone interview. Finally, to classify women as vulvodynia cases, Elizabeth Stewart, MD, director of the Stewart-Forbes Vulvovaginal Specialty Service at Harvard Vanguard Medical Associates, reviewed the screening questionnaire and telephone interviews to determine if their symptoms were consistent with the way vulvodynia is defined by the International Society for the Study of Vulvovaginal Disease.

Dr. Stewart identified 256 eligible cases, of which 194 agreed to further participate in the study. All of these suspected vulvodynia cases were invited to undergo a gynecological examination by Dr. Stewart and 73 women agreed. Upon examination, Dr. Stewart excluded 17 women because their vulvar pain was caused by another condition. She confirmed a diagnosis of vulvodynia in the majority of suspected cases. For the purpose of our study, 177 women were considered population-based vulvodynia cases: 56 clinically confirmed and 121 unconfirmed. To increase the size of our study, allowing us to have the statistical power to examine smaller effects, we added 65 newly clinically confirmed vulvodynia cases from Dr. Stewart's practice. All of these women came from communities in and around Boston similar to the population-based vulvodynia cases. A total of 242 vulvodynia cases were identified, of which 50 percent were clinically confirmed. For each of these cases, a control woman was identified. Women were eligible to serve as controls if they completed the screener questionnaire, had no history of vulvar pain, and agreed to participate in the study. The one control matched to each case had to live in the same town as the case and be of similar age at the time of the study (+/- 5 years).

**STUDY METHODS: Urogenital Infections**

Our goal was to determine whether urogenital infections increased the risk of developing vulvodynia. To do so, we had to identify infections that occurred prior to onset of vulvar pain. We asked each woman with vulvodynia to report the age at which her vulvar pain symptoms first occurred and designated it as her "reference age." To establish a link between infection and development of vulvodynia, we only included infections that occurred prior to that age. An analogous age did not exist among the controls because they did not have a history of vulvar pain. Therefore, for each control, we used the same reference age as her matched case. For example, if a woman was 17 when the first vulvar pain episode occurred, her reference age was 17; her matched control would then automatically receive 17 as a reference age. For both women, we only analyzed infections that occurred prior to age 17.

Our study did not require the use of medical records, but instead relied on data from a medical history questionnaire completed by each woman. Medical records are not an ideal method for identifying a history of urogenital infections for two reasons: first, some infections do not receive a clinical diagnosis or intervention; and secondly, it is unlikely that a current medical record would include a woman's

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lifelong history of these infections, such as those prior to her reference age. The questionnaire assessed eight types of urogenital infections: chlamydia, gonorrhea, trichomoniasis, genital herpes, genital warts, bacterial vaginosis, yeast infection and urinary tract infection. If a woman reported that she had one of these infections, she was asked to report her age at (first) infection. Women with a history of infection prior to their reference age were classified as *exposed*; women with no history of infection prior to their reference age were classified as *unexposed.* The unexposed group included women with no history of infection and those with a history of infection after their reference age.

A sexual behavior questionnaire completed by each woman reported her age at first intercourse, number of sex partners, and average frequency of sexual intercourse (reported by decade, e.g., 20s). We were interested in whether urogenital infections, some of which are acquired only during sexual activity, increased the risk of vulvodynia. Therefore, we limited our analysis sample to women who had engaged in sexual intercourse before their reference age. Women who did not report an age of first sexual intercourse (19 cases and 21 controls) or did not have sex prior to their reference age (32 cases and 50 controls) were excluded. These exclusions left us with 191 vulvodynia cases and 171 controls for the final analysis.

**Allergic Conditions**

To assess whether allergic episodes increased the risk of developing vulvodynia, we determined which women had suffered from an allergy prior to their reference age. During the telephone interview, we inquired about the following allergy-related conditions: seasonal allergies, allergic reactions to insect stings and bites, and hives. For each of the allergy-related conditions, we assessed the age at first onset and the frequency of the episodes. From the recruitment based on the general population screening , our analysis included 239 cases and 239 controls. (Three case-control pairs were excluded from our analysis due to inadequate data on allergic conditions.) Analyses were stratified by whether the cases were population-based or clinically confirmed. In the statistical models, matching variables such as township and age were taken into consideration, as well as potential confounding variables, such as education level and pain with first tampon use.

**RESULTS**: U**rogenital Infections**

Most participants were Caucasian and the majority held an advanced educational degree. The average age of the women at the time they completed the study questionnaire was 37 years, and the average age of onset of vulvar pain symptoms for cases, i.e., reference age, was 27 years. Participants were asked how many sex partners they had during the decade closest to the reference age; about 50 percent reported one sex partner and about 45 percent reported between two and five sex partners. There were no differences in the number of sex partners and frequency of intercourse among cases and controls.

When we compared the histories of eight distinct urogenital infections in women with vulvodynia versus controls, we found that genital warts, trichomoniasis, bacterial vaginosis, urinary tract infection, and yeast infections were significantly associated with an increased risk of vulvodynia. For example, women with vulvodynia were 3.4 times more likely than controls to have had a history of genital warts prior to reference age. They were also 5.7 times more likely to have had trichomoniasis, 3.7 times more likely to have had bacterial vaginosis, and twice as likely to have had urinary tract or yeast infections.

Because prior research had indicated that immuno-inflammatory responses are magnified when

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multiple urogenital tract infections are present, we sought to determine the extent to which multiple infections increased the risk of vulvodynia. Women were classified according to the number of reported infections prior to reference age. The results showed that the average number of different types of infections before reference age was higher among vulvodynia cases than controls.

Finally, we sought to determine the specific combinations of infections that appeared to carry the greatest risk. For example, the risk of vulvodynia with only a history of yeast infection was not significant, but a history of yeast infection plus urinary tract infection increased the risk by 2.4-fold. A history of both yeast and sexually transmitted infection increased the risk of vulvodynia by 6.6-fold. Lastly, a yeast infection, with both a history of urinary tract infection and sexually transmitted infection, conferred a risk of nearly 10-fold.

We observed several associations between prior urogential infections and the onset of vulvodynia, and hypothesize that these infections, however transient, may induce a cascade of inflammatory processes that predispose women to develop vulvodynia. A striking dose-response was observed with an increase in the number of prior infections, i.e., the more infections, the greater the risk. Additionally, the combination of infections may influence risk.

**Allergic Conditions**

Vulvodynia cases were more than twice as likely as controls to report a history of hives prior to vulvar pain symptoms. There also appeared to be a dose-response relationship between the number of episodes of hives prior to reference age and the likelihood of developing vulvodynia. A history of an allergic reaction to insect bites and stings was also more commonly reported among women with vulvodynia than controls. The same was true for a history of seasonal allergy prior to reference age.

To our knowledge, ours is the first epidemiological study to report an association between allergic reactions and vulvodynia. Our data suggest that women with a history of hives, seasonal allergies or reaction to insect stings appear to be more prone to later development of vulvodynia than women with no history of these allergic reactions. This association was largely confined to exposures that occurred before the first vulvar pain episode, suggesting that an altered immuno-inflammatory response to environmentally induced allergic reactions may predispose women to develop vulvodynia, or may be a marker of factors involved in the onset of vulvodynia.

**DISCUSSION**

In summary, we found that certain urogenital infections and allergy-related conditions were associated with subsequent onset of vulvodynia. In addition, a dose-response association existed for some risk factors. These findings suggest that an underlying inflammatory process, associated with infections and allergy, may be contributing to the development of vulvodynia.

Assuming our hypothesis is further confirmed, it is unclear why we did not observe an association between vulvodynia and inflammatory skin conditions such as psoriasis and acne, nor the two most common sexually transmitted infections, chlamydia and gonorrhea. A prior study by Smith (2002) also failed to find an association between PVD and chlamydia or gonorrhea. Perhaps variations in the immune response to different types of urogenital infections may account for this inconsistency.

There were some limitations to our study. First, we relied heavily on women's recall for both their history of allergy and urogenital infections. Additionally, some of the infections that we investigated are commonly asymptomatic and women may not seek care for them. Secondly, there is limited evidence

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that treatment for infection may lead to vulvodynia. One such unique example, although theories exist about antibiotics as well, is the onset of vulvar pain after the removal of genital warts caused by the human papillomavirus. Third, because we only analyzed data from women who engaged in sexual intercourse before the development of their vulvodynia, we cannot differentiate between the effects of the onset of sexual intercourse versus infection in the development of vulvodynia. Finally, we were not able to clinically confirm half of the vulvodynia cases, and none of the controls were examined to rule out vulvodynia.

Although we faced many challenges, ours is the first epidemiological study to report an association between allergic reactions and vulvodynia, and a first attempt to assess the role of allergy and urogenital infection in the development of vulvar pain. Our results lend plausibility to the possibility of a causal relationship between an infectious or inflammatory process and the development of vulvodynia. Thus, further investigation into the role of early onset of allergic response and infection in the risk of vulvodynia is warranted. Improvements in our study design should include prospective documentation of allergy and infections among women, and assessment of repeated episodes and specific treatment regimens. Should our findings be replicated, future intervention studies should explore how to moderate local immune response prior to the development of vulvodynia.

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# Overcoming Depression Associated with Chronic Pain

Many people living with chronic pain struggle to keep their lives together, so it isn't surprising that a significant percentage of them also suffer from depression. Actually, if you've lived with relatively constant pain for many months or years, it would be surprising if you didn't feel depressed at some point in time. The main focus of this article is to discuss ways to help overcome the depression that can occur as a consequence of living with chronic pain.

**Pain and Depression: A Vicious Cycle**

Pain provokes an emotional reaction in everyone, whether it's agitation, irritability, anxiety and/or depression. Living with pain day after day means that, to some extent, you're living in a heightened emotional state that can wear you down both physically and mentally. Over time, living with this type of stress can lead to fatigue, sleep disturbance or chronic anxiety and depression, among other symptoms.

Research scientists have noted a physiological link between chronic pain and depression, i.e. both conditions involve the neurotransmitters serotonin and norepinephrine. Thus, many pain specialists treat chronic pain with antidepressants that act directly on these neurotransmitters. The importance of working with a pain specialist to try to minimize your pain cannot be emphasized enough. Many women with vulvodynia benefit from both a long-term pain relief strategy and specific medication or other additional treatment for severe flare-up episodes. Even though their pain may be well-controlled most of the time, most women with vulvodynia experience unpredictable flare-ups. What if you have to sit through an eight hour conference or a dinner with your boss on a day when your pain is an 8 or 9 out of 10? If you've developed a relationship with a pain specialist, he/she should be able to prescribe a limited amount of medication to help you cope with severe pain episodes. Even if the medication sits untouched in your dresser drawer, knowing that you have it, if the need arises, is anxiety-relieving.

It is widely accepted by pain experts that depression and/or anxiety are likely to intensify the pain experience, leading to a "vicious cycle." If you experience anxiety, for example, your breathing becomes shallow, your muscles become tense and, if nothing else, you become more aware of your body. Thus, if you're in pain, you become even more aware of the pain. When you're feeling depressed, you tend to be inactive and have negative thoughts focusing on your pain. Thoughts such as "This pain will never go away," or "My life will never be normal again," only serve to intensify pain and depression. So, what is the vicious cycle? You live with chronic pain and that makes you feel depressed, which then intensifies your pain, making you feel more depressed, and so on.

**Breaking the Vicious Cycle**

It isn't easy, but there are some ways that people living with chronic pain can tackle the black cloud of depression. Two of the hallmark characteristics of depression are inactivity and isolation. In order to feel better, it's critical to start moving again, engaging in rewarding activities and seeing people you enjoy. In the beginning you can set small goals, such as taking a 5 to 10 minute walk or making a brief phone call to a friend. Any action, no matter how small, is better than no action when you're depressed. Once you've accomplished some small goals, you can take a bigger step, e.g., make a lunch date with a close friend (who would understand if you have to cancel with short notice).

It is understandable that people with chronic pain and depression tend to avoid exercise, but you should try not to eliminate it entirely. Gentle, daily physical activity can be very beneficial for people with chronic pain and depression. If the most you

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can do is walk for 10 minutes once or twice a day, that's fine!

Any activity that demands your full concentration is helpful, whether it is deep breathing or a Sudoku puzzle. Before suggesting some ideas for alleviating depression associated with chronic pain, it's important to note that the severity of pain clearly affects one's ability to socialize or engage in certain activities. The notion that you can distract yourself from *severe pain* by watching a movie or reading a book is unrealistic. For severe pain, you will need strong pain-relieving medication, e.g., an opioid, or other treatment strategy. The ability to distract yourself by reading a book or having dinner with friends is much more likely to be effective when your pain is at a mild to moderate level.

That said, you can start by making a list of activities or things you enjoy. Listen to your favorite music. Try doing Sudoku, crossword or jigsaw puzzles. Spend some time playing with your pet. Get some sunlight, even if it's for only 10 minutes. Take a long relaxing shower or bath. Buy colorful flowers for your bedroom or kitchen. Eat some ice cream (preferably lowfat!) or other delicious treat once a day. Watch a funny movie, or if you prefer, a romantic drama or thriller. Going to Blockbuster to rent a movie requires a short trip out of the house which is good for you, but if you're not able, join Netflix or Blockbuster online. Sometimes you'll have to push yourself to do an activity when you don't feel like it, but summoning the motivation to do things will become easier over time.

Experts say we should aim for eight hours of sleep at night. Getting quality sleep is important for everyone, and even more so for people living with chronic pain. If you're having difficulty falling asleep or staying asleep on a regular basis, seek help from a pain or sleep specialist**.**

If you're feeling anxious or stressed, try deep breathing several times each day. Most people are shallow breathers, so learning to breathe deeply requires concentration and can distract you from pain. As often as you're able, use relaxation techniques such as meditation or yoga to reduce stress. Some women with vulvodynia find that writing in a journal is a helpful emotional outlet and also a way to keep track of whether their current pain regimen is effective. Keep a journal for a couple of weeks and see if writing about how you feel is helpful.

**Reaching Out**

If you remain isolated, it's more difficult to break the pain-depression cycle. It may feel burdensome at times, but it's important to make contact with a supportive friend or relative. Even if you discuss how you feel with your partner or spouse, it is important to talk with someone who is not directly involved. Some people prefer to attend support groups, but if that's not for you, talk to a caring friend. Another option is to ask your health care provider for a referral to a therapist, preferably someone who specializes in helping individuals with chronic illness.

**Conclusion**

It takes time to learn how to best deal with chronic pain, but you can have a rewarding life in spite of it. Millions of people do it every day. After you're feeling less depressed (and less pain), maybe you can be a support to someone else who is having difficulty, which will make you feel even better about yourself. ■

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# NVA Awards Two Research Grants

**Epidemiologist Receives NVA Career Award**

The NVA is pleased to announce that Ruby Nguyen, PhD, assistant professor in the division of epidemiology and community health at the University of Minnesota's School of Public Health, is the recipient of the 2010 *Dr. Stanley C. Marinoff Vulvodynia Career Development Award*. To date, researchers have not investigated how pregnancy and childbirth affect the severity of vulvodynia, leaving obstetricians without guidelines for vulvodynia patients who are, or want to become, pregnant. Dr. Nyugen will conduct a prospective study of 160 pregnant women, half of whom suffer from vulvodynia. At each trimester and two months postpartum, these women will complete questionnaires on vulvar pain intensity and factors that can modify pain levels, including vulvovaginal infection, dermatological conditions, vulvar varicosities, mode of delivery and episiotomy/tear with vaginal childbirth. She will assess whether pregnant women with vulvodynia experience a change in vulvar pain severity or remission of symptoms over the course of pregnancy or postpartum period and/or have an increased risk of developing postpartum vulvovaginal pain.

**Cornell Researchers Awarded Grant**

Steven Witkin, PhD, professor of immunology, and William Ledger, MD, chairman emeritus and professor, both of the department of obstetrics and gynecology, Weill Medical College of Cornell University, have been studying the etiology of Provoked Vestibulodynia (PVD, aka vulvar vestibulitis) for the past decade. Women with PVD report a variety of events that initially trigger their symptoms, including vulvovaginal infection, childbirth and hormonal alteration; researchers have not yet identified a single etiology of the condition and most investigators propose that it is likely multifactorial.

One cause of PVD may be a local, chronic inflammatory immune response that eventually induces localized peripheral nerve damage and increased pain sensitivity. Witkin and Ledger have demonstrated that subgroups of women with PVD have polymorphisms (alterations) in genes associated with prolonged inflammation in response to vulvovaginal infection; women with PVD show a reduced capacity to 'turn-off' inflammation (ILIRN polymorphism), an increased capacity to initiate inflammation (IL-1beta polymorphism) and a reduced capacity to combat *Candida* albicans infections (MBL and CIAS1 polymorphisms).

According to Drs. Witkin and Ledger, what remains undetermined is (i) a detailed analysis of the types of bacterial organisms, or endogenous flora, found in the vagina and vulva of women with PVD, and (ii) the relationship between specific organisms and the carriage of these gene alterations or appearance of vestibular inflammation. They hypothesize that it is the interaction between specific bacteria types and a woman's genetic makeup that determines the extent of vaginal and sub-surface vestibular inflammation and the degree of susceptibility to developing PVD.

With their current NVA grant, Drs. Witkin and Ledger will analyze the vulvovaginal flora in 40 PVD patients when they are symptomatic, and then eight weeks after treatment, comparing the findings to those of an equal number of controls. They will also use a new instrument to visualize the extent of patients' vaginal and vestibular inflammation. The researchers will obtain DNA samples to determine whether polymorphisms associated with inflammation, vulvovaginal infection and peripheral nerve damage (IL1RN, CIAS1, MBL2, and MnSOD genes) are more prevalent in women with PVD than controls. Furthermore, they will quantify levels of immune mediators, pro-inflammatory cytokines (IL-1beta, tumor necrosis factor-alpha) and anti-inflammatory cytokines (IL-1ra and IL-4) in vaginal secretions.■

# NVA Year in Review: 2009

**Vulvodynia Treatment Registry**
Our most notable achievement of 2009 would not have been possible without the commitment and generosity of a longtime donor who gave NVA a $50,000 grant to fund the creation of the first *Vulvodynia Treatment Registry*. With very few NIH- or pharmaceutically-funded clinical trials on treatments for vulvodynia, we decided it was a priority for NVA to launch this project to study treatment efficacy. The Registry's investigators will gather clinical data on the long-term effectiveness of different vulvodynia treatments. Their findings will help to identify which subgroups of vulvodynia patients are likely to benefit from a particular treatment and also guide the development of future clinical trials.

**New Online Tutorials for Patients and Providers**
With support from The Patty Brisben Foundation, NVA created a novel online tutorial for women with vulvodynia (http://learnpatient.nva.org) and updated its online tutorial for health care professionals. The patient tutorial, *Everything You Need to Know About Vulvodynia,* was designed to help women make informed decisions about their health care and build stronger partnerships with their medical providers. The tutorial covers gynecologic and pelvic anatomy, diagnosis and treatment of vulvodynia, coping with chronic pain, and practical advice on sexual and relationship issues. Since its launch in June, over 15,000 women have viewed the tutorial and many have sent us emails expressing how much it has helped them.

In recent months, under the guidance of NVA medical advisory board members, Drs. Stanley Marinoff, Paul Nyirjesy and Steven Witkin, NVA revised its health care provider tutorial, *Vulvodynia: Integrating Current Knowledge into Clinical Practice* (http://learnprovider.nva.org) to incorporate the most recent research findings in the field. The updated tutorial provides continuing medical education credit for health care professionals until 2012.

**Research Grants & Career Development Award**
NVA is currently funding 11 ongoing studies. In addition to launching the Vulvodynia Treatment Registry, we awarded six research grants this past year. Recently, a research grant was awarded to Steven Witkin, PhD, and William Ledger, MD, of Weill Medical College of Cornell University. (See page 9.) In December, 15 medical professionals submitted proposals for the *Dr. Stanley C. Marinoff Vulvodynia Career Development Award*, which encourages the involvement of junior faculty in the vulvodynia field. Our 2010 award recipient is Ruby Nguyen, MD, assistant professor in the School of Public Health at the University of Minnesota, who will study the effect of pregnancy and childbirth on vulvodynia. (See page 9.) Summaries of all NVA-funded projects can be viewed online at: www.nva.org/research_fund.html and www.nva.org/career_development_award.html.

**NVA on Capitol Hill**
NVA collaborated with Senator Tom Harkin's (D-IA) staff to include strong language on vulvodynia in Congress' FY2010 National Institutes of Health (NIH) Appropriations Bill. NVA also participated in a Capitol Hill meeting attended by the director of the National Institute of Child Health and Human Development, who subsequently designated vulvodynia as a "high-priority" area of research. In 2009, four of the 20 vulvodynia researchers who submitted NIH grant applications were funded.

**Media Coverage**
In addition to numerous print articles, vulvodynia was featured on three television shows: *20/20, The Doctors and The Tyra Banks Show*. NVA also contributed chapters to two new books – *Female Sexual Pain Disorders* by Drs. Andrew Goldstein, Caroline Pukall and Irwin Goldstein, and *Secret Suffering* by Susan Bilheimer and Dr. Robert J. Echenberg. ■

## Lifespan

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them reported pain upon contact and 20 percent reported diffuse burning or knifelike pain. Ninety percent experienced ongoing pain for many years. Caucasian and African American women exhibited similar lifetime prevalence; Hispanic women were 80 percent more likely to experience symptoms compared to other ethnic groups. The incidence of symptom onset was highest between the ages of 18 and 25 and lowest after age 35. Women with vulvar pain were seven times more likely than controls to report difficulty and pain with their first tampon use. Almost 40 percent never sought medical care; 60 percent of those who sought medical care reported visiting more than three providers to receive a diagnosis and 40 percent remained undiagnosed after three medical consults.

In another epidemiological study, telephone surveys were administered to 1,012 women between the ages of 18 and 80. Vulvodynia was defined as "vulvar discomfort lasting at least six months, most often described as burning pain and occurring in the absence of relevant visible findings or a specific, identifiable neurologic disorder." Lifetime prevalence was almost 10 percent, and point prevalence, i.e., the presence of symptoms within the six months preceding the survey, was almost four percent. Sixty percent reported a compromised ability to enjoy life and 75 percent felt "out of control" of their bodies. Half reported a moderate to severe impact on their sex lives, causing them to terminate attempts at sexual intercourse or avoid sexual relations altogether. Women with vulvodynia were significantly more likely to report chronic medical conditions, including chronic fatigue syndrome, fibromyalgia, irritable bowel syndrome and depression. Additionally, women with vulvodynia were six times more likely to report three or more annual urinary tract infections and four times as likely to report more than three annual yeast infections.

University of Michigan researchers randomly surveyed 1,032 women between the ages of 18 and 85 using SurveySpot, an internet survey panel. They found that almost 30 percent reported a history of pain in the vulvar vestibule without accompanying deep pain. Eight percent reported experiencing pain within the past six months and three percent reported pain lasting more than three months. If large studies uphold these estimates, it would mean that more than two million American women could have symptoms suggestive of vulvodynia.

The same investigators also conducted an internet and written survey of 1,046 Michigan women, aged 19 to 92, who were members of the University of Michigan's Women's Health Registry. Ten percent reported a history of vulvar pain lasting more than three months, three percent were in remission and seven percent currently experienced symptoms. Twenty-eight patients and 34 pain-free controls underwent a gynecological examination; a diagnosis of vulvodynia was confirmed in 90 percent of patients. Two years later, the investigators conducted a follow-up study of 744 of the surveyed women; of the 372 asymptomatic controls initially enrolled, more than three percent had developed vulvodynia symptoms. During the same period, remission had occurred in 22 percent of vulvodynia patients; women who reported less severe pain or did not suffer from post-intercourse pain were more likely to experience remission.

**Menopause**

The prevalence of vulvodynia in postmenopausal women is unknown. Studies summarized in the prior section included women up to age 92, but Harlow was the only investigator to report the age at symptom onset. Although reproductive status was not ascertained, he found that almost four percent of

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women between the ages of 45 and 54, and another four percent aged 55 to 64 years, reported burning or knifelike vulvar pain or pain on contact; in 50 percent of cases, pain limited sexual intercourse. Some population-based studies have included postmenopausal women who took hormone replacement medication; in these studies, the prevalence of painful sexual intercourse ranged from two to seven percent. In postmenopausal women, vulvovaginal pain is typically associated with declining estrogen and ensuing tissue atrophy. Recent studies, however, suggest that a lack of estrogen is unlikely to be the sole cause of vulvar pain in postmenopausal women, because estrogen supplementation is not curative in all cases. To date, researchers have not studied other factors that might cause vulvodynia in postmenopausal women.

**Childhood and Adolescence**

Only one retrospective case study of six girls between the ages of four and nine has investigated vulvodynia in the pre-adolescent population. Most girls in the study reported relatively constant pain, similar to that experienced by adult women with Generalized Vulvodynia. Vulvar pain may be largely undiscovered in young girls, because they don't use tampons and are rarely sexually-active.

Researchers have not investigated the prevalence of chronic non-sexual vulvar pain in the adolescent population, but a few have studied pain with intercourse. A cross-sectional study of 251 sexually-active girls between the ages of 12 and 19 found that 20 percent reported chronic painful intercourse lasting six months or longer; the most common pain site was the area surrounding the vaginal opening. Almost 70 percent reported that symptoms began with their first intercourse attempt. Girls who experienced severe pain with first tampon use were four times more likely to report chronic painful intercourse. An earlier study of 172 girls and young women (ages 12-26) who visited Swedish adolescent health centers found that 34 percent reported recurrent vulvar pain provoked by intercourse. The following factors increased the risk of vulvar pain: regular intercourse before age 16, oral contraceptive use for more than two years, and a history of vulvar irritation, itching and fissures.

**Pregnancy and Postpartum**

In a prospective longitudinal study of vulvar pain during pregnancy, questionnaires were administered to 103 pregnant women at each trimester and three months postpartum. The investigator found that the prevalence of vulvar burning, itching and pain increased during pregnancy and improved postpartum, but that painful intercourse increased during pregnancy and remained elevated postpartum. The first study to investigate the prevalence of genital and pelvic pain in the second year after childbirth found that, at an average of 14 months postpartum, 18 percent of 114 women reported current genital and/or pelvic pain lasting three months or more and 26 percent reported an episode of resolved pain. Nine percent continued to experience pain that began after their most recent childbirth. Many factors, including maternal age and number of prior births, were assessed, but only a history of non-genital chronic pain (e.g., migraine, back pain) significantly correlated with persistent pregnancy- or postpartum-onset genital or pelvic pain.

**Conclusion**

Recent epidemiological surveys have shown that vulvodynia can occur at any age, although it is most likely to start in young adulthood. The high prevalence of this chronic pain condition in women, both young and old, should underscore the need for research on its etiology and potential risk factors.

(*Editor's note: If you would like to receive the references for this article, please send an e-mail to gigi@nva.org or call 301-949-5114.*) ■