OBJECTIVE: To define correlations between vulvar vestibulitis syndrome (VVS) and childhood nocturnal enuresis and the effect of biofeedback therapy.

STUDY DESIGN: Of 104 women diagnosed with VVS, 54 (30 with primary vulvar vestibulitis syndrome [PVVS] and 24 with secondary vulvar vestibulitis syndrome [SVVS], mean age 24.5 years) chose Glazer biofeedback therapy. Information on lower urinary tract symptoms was recorded at the initial and final visits.

RESULTS: Eight of the 30 women with PVVS (26.6%) had a history of childhood enuresis as compared to none of the women with SVVS (p < 0.01). The 8 women developed lower urinary tract symptoms following biofeedback treatment. None of the women with SVVS had urinary symptoms before or following biofeedback therapy. The high, unstable baseline muscle tone revealed by the Glazer technique to be present in all VVS patients underwent substantial reduction and stabilization at the end of biofeedback therapy.

CONCLUSION: Childhood nocturnal enuresis is apparently common among women with PVVS. New urinary symptoms may develop following biofeedback therapy for PVVS. (J Reprod Med 2005;50:49–52)

Keywords: vulva, enuresis, vulvar vestibulitis syndrome.

Vulvar vestibulitis syndrome (VVS) is the most common cause of introital dyspareunia in women aged 20–30 years, affecting approximately 15% of gynecologic patients. VVS is characterized by sensory abnormalities of the vestibule and surrounding tissue, such as an unpleasant burning and pain sensation or a painful response to a stimulus that is not characteristically painful, such as sexual intercourse or the touch of a cotton swab. While the etiology of VVS is not well defined, an association with other disorders, such as interstitial cystitis, urethral syndromes, urinary tract infection and irritable bowel syndrome, has been reported.

In 1995, Glazer et al described the favorable...
outcome of surface electromyographic (sEMG)-assisted rehabilitation of pelvic floor musculature in the treatment of VVS. Since then, sEMG-assisted biofeedback restoration of adequate pelvic floor musculature function has become an important tool in the management of VVS. The approach is based on the findings that cutaneous vulvar disturbances destabilize pelvic floor muscles and that this therapeutic approach palliates the noxious triggers. Given the association of VVS with lower urinary tract symptoms (LUTS), we sought to determine whether there was a correlation between childhood nocturnal enuresis and VVS and what the effect was of biofeedback therapy among women with VVS who had a history of nocturnal enuresis.

Materials and Methods

Patient Population

Of 104 women diagnosed with VVS at the Sex Therapy Clinic of Lis Maternity Hospital, 54 (mean age 24.5 years, range 18–35) chose Glazer biofeedback therapy and formed the study group. The other women preferred to be treated with tricyclic antidepressants, psychological counseling and treatment at the pain clinic.

The diagnosis of VVS relied upon Friedrich criteria: (1) severe vulvar vestibular pain upon touch or attempted vaginal entry without any forceful entry into the vagina, (2) tenderness to pressure localized within the vulvar vestibule, and (3) physical findings confined to vulvar erythema of various degrees. Patients with other coexisting vulvovaginal conditions were excluded from the study. None of the participating women had undergone prior surgery for the condition. All reported previous ineffective use of topical treatments. At the time of evaluation, all women complained of dyspareunia that prevented pain-free vaginal intercourse.

VVS was classified as primary dyspareunia occurring at the first attempt at intercourse (PVVS) (n = 30) and secondary dyspareunia occurring after pain-free intercourse in the past (SVVS) (n = 24).

Biofeedback Therapy

Using the Glazer protocol, women learned to stabilize their pelvic muscles by reducing the standard deviation of the sEMG signals put out by the EMG trainer. The EMG trainer has reproducible, reliable measures and is particularly suited to office biofeedback evaluation. The sEMG electrode is a vaginal plug that can be inserted and removed easily by the patient with negligible discomfort. On the first visit, a brief medical history of the patient was taken, and the initial pelvic floor muscle sEMG assessment in accordance with the Glazer protocol for pelvic floor muscle evaluation was carried out. This consisted of 5 segments at rest and during pelvic contraction at various rates. At the second session, the patient was taught how to use the EMG trainer and further instructions on the performance of daily home exercises without the EMG trainer were provided. The exercises were to be practiced for a period of 20 minutes at least once daily. Patients were reevaluated once weekly in the office in order to ensure correct use of the EMG trainer and continued compliance with the home exercise regimen, and to rectify incorrect exercise maneuvers. There were 4 weekly office sessions followed by up to 6 monthly sessions unless the patient reported a level of improvement that allowed intercourse without discomfort. Information on lower tract symptoms was recorded at the initial and final follow-up visits.

Statistical Analysis

The χ² test was used to analyze data on enuresis and LUTS.

Results

At the completion of the study, all women reported a reduction in their vestibular pain that permitted vaginal intercourse without discomfort. Eight of the 30 women with PVVS (26.6%) but none of the 24 women with SVVS (p < 0.01) had reported a history of childhood nocturnal enuresis for which they were treated with medication or behavioral therapy (e.g., conditioning alarm devices, delaying voiding tactics, practice in stopping and starting urination). Information on the measures that had been used to treat their nocturnal enuresis was sketchy due to the length of time (15–20 years) that had elapsed since then. Following biofeedback therapy, these same 8 women reported having new-onset lower urinary tract symptoms, such as frequency, urgency and urinary incontinence, necessitating the usage of absorbent pads and behavioral treatment. All 8 women reported a combination of both frequency and urgency. One patient reported daytime urgency not associated with effort. All these women were referred back to their attending physicians, and no long-term follow-up was obtained regarding treatments and outcome of the urinary symptoms. High pelvic floor muscle instability, as evaluated by the Glazer technique, was found in all VVS patients. At the end of the therapeutic course, the
EMG recordings demonstrated a substantial reduction in and stabilization of muscle instability in all patients.

**Discussion**

The women who reported childhood nocturnal enuresis were all in the PVVS group. The same women also reported new-onset LUTS following biofeedback therapy, which had been effective in alleviating their discomfort associated with VVS.

Voluntary control over micturition is a learned skill, and, as with other skills, the learning process is affected by many nonmeasurable environmental influences. Nocturnal enuresis is a benign condition and not a disease. It may be present in 15% of children at the age of 5 years, with spontaneous resolution with time. Combination therapy consisting of an enuresis alarm, bladder training motivational therapy and pelvic floor muscle training is considered better than medical treatment (desmopressin, oxybutynin or tricyclic antidepressants). These treatment options depend on the child’s motivation and cooperation in acquiring control over micturition. Lack of control over micturition represents a continuance of the transitional phase in the development of micturitional control whereby the child learns to prevent involuntary wetting by forceful contraction of the external urethral sphincter. This process of gaining control over micturition depends on the integrity of both slow and fast twitch myofibers in the rhabdosphincter area.

Our findings during initial sEMG pelvic floor muscle recording are in agreement with those reported by White et al, who stated that the majority (88%) of women presenting with VVS demonstrated significant pelvic floor muscle hypertonicity and resting instability, often accompanied by slow recruitment and recovery time, contractile weakness and instability, with low-spectral frequencies on the EMG apparatus. The end results of biofeedback therapy and reduction in baseline muscle tone are reduced amplitude and variability during rest and a reduction of the hypertonicity and instability associated with chronic uncoordinated discharge of fast twitch neurofibers. Behavioral conditioning of pelvic floor musculature, acquired during childhood to control nocturnal enuresis, may cause a contingent muscle reaction, resulting in the typical pelvic floor muscle instability that contributes to PVVS. In spite of the prolonged interval of vulvar painlessness after control of nocturnal enuresis, reduction in this muscle tone following biofeedback therapy seems to induce new-onset of urinary symptoms. Another hypothesis is that nocturnal enuresis could be one of the first symptoms of some kind of sensitization of the urogenital system, which can present as interstitial cystitis, urethral syndrome or vulvar vestibulitis, either simultaneously or successively.

Our group of patients with PVVS and childhood nocturnal enuresis was too small to draw conclusions about the possible physiologic mechanisms associated with biofeedback therapy and childhood nocturnal enuresis. In addition, our group of women with VVS chose biofeedback therapy from among several therapeutic options and may therefore represent a select group that is not representative of all women with VVS. At the same time, however, about 50% of women with VVS in our clinic choose this treatment modality, and we think that they represent women with VVS referred to a sexual therapy clinic by community physicians.

In conclusion, women with PVVS and childhood nocturnal enuresis and clinicians treating them with sEMG-assisted reconditioning of pelvic floor muscles should be aware that new-onset LUTS can follow biofeedback therapy designed to alleviate PVVS.

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**References**

29th Annual Meeting
of the
Frederick P. Zuspan Society

San Francisco Marriott Downtown
San Francisco, California
Monday, May 9, 2005

The 29th Annual Meeting of the Frederick P. Zuspan Society will be held during the annual meeting of the American College of Obstetricians and Gynecologists. The society will meet at the San Francisco Marriott Downtown in San Francisco from 5:30 to 7:00 PM on Monday, May 9, 2005. Wine and cheese will be served.

For further information and reservations, contact:

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