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This newsletter is quarterly and contains abstracts from medical journals published between September and December 2006 (abstracts presented at scientific meetings may also be included). Please direct any comments regarding this newsletter to chris@nva.org.

Vulvodynia / Pain

ACOG Committee Opinion No. 345: Vulvodynia.

Obstet Gynecol. 2006 Oct;108(4):1049-52

Vulvodynia is a complex disorder that can be difficult to treat. It is described by most patients as burning, stinging, irritation, or rawness. Many treatment options have been used, including vulvar care measures, medication, biofeed training, physical therapy, dietary modifications, sexual counseling and surgery. A cotton swab test is used to distinguish generalized disease from localized disease. No one treatment is effective for all patients. A number of measures can be taken to prevent irritation, and several medications can be used to treat the condition.

Treatment of vulvodynia with tricyclic antidepressants: efficacy and associated factors.

Reed BD, Caron AM, Gorenflo DW, Haefner HK

J Low Genit Tract Dis. 2006 Oct;10(4):245-51

OBJECTIVE.: To determine the efficacy of tricyclic antidepressants (TCAs) as treatment for vulvodynia, and to identify demographic factors and pain characteristics associated with improvement. **MATERIALS AND METHODS.:** Between January 2001 and April 2004, women diagnosed with vulvodynia were offered TCA therapy. The patients rated their worst recent pain on a 10-point scale at baseline and at follow-up; improvement was classified as at least 50% reduction in reported pain from baseline. **RESULTS.:** Of 271 women diagnosed with vulvodynia, 209 (77.1%) were treated initially with a TCA (amitriptyline [n = 183], desipramine [n = 23], and other tricyclic medications [n = 3]). One hundred sixty-two (59.8%) of the women were followed up at a median period of 3.2 months after their initial visit, including 122 women who had started on a TCA. Of 83 women taking a TCA at the first follow-up, 49 (59.3%) improved by more than 50%, compared with 30 of 79 women not taking TCA at follow-up (improvement rate = 38.0%; p = .007; odds ratio = 2.35; 95% CI = 1.23-4.42). Multivariate analysis indicated that age, severity of pain, diagnosis (localized vs generalized vulvar pain), length of time with pain before treatment, age at menarche, use of oral contraceptives, and the number of previous pregnancies were not associated with the outcome; however, taking a TCA at the time of the first follow-up was strongly associated with improvement (p < .001; odds ratio = 4.23; 95% CI = 1.98-9.01). Repeated analysis including only those women prescribed with amitriptyline rather than any tricyclic revealed similar results. **CONCLUSIONS.:** Women with vulvodynia who were prescribed a TCA in general (or amitriptyline, specifically) were more likely to have pain improvement compared with those women not taking these medications at follow-up. Randomized, controlled studies of TCAs versus other treatments are needed to clarify the overall effectiveness of these drugs.

EMG biofeedback versus topical lidocaine gel: a randomized study for the treatment of women with vulvar vestibulitis.

Danielsson I, Torstensson T, Brodda-Jansen G, Bohm-Starke N
Acta Obstet Gynecol Scand. 2006;85(11):1360-7

Background. To evaluate the efficacy of electromyographic biofeedback and topical lidocaine treatment for women with vulvar vestibulitis. **Methods.** A prospective randomized study where 46 women with vulvar vestibulitis were randomized to receive either electromyographic biofeedback or topical lidocaine treatment for four months. Assessments with vulvar pressure pain thresholds and questionnaires regarding quality of life, psychosocial adjustments, and sexual functioning were made before treatment, after treatment, and at six- and 12-month follow-ups. Nonparametric statistical methods were used to analyze differences in outcomes. **Results.** Nine women (9/46) dropped out during the treatment period. Both treatments showed significantly improved values for vestibular pressure pain thresholds, quality of life measurements, and sexual functioning at the 12-month follow-up. No differences were found between the two treatment groups. No severe side effects were reported. **Conclusions.** Four months' treatment with electromyographic biofeedback and topical lidocaine gave statistically significant improvements on vestibular pain measurements, sexual functioning, and psychosocial adjustments at the 12-month follow-up. No differences in outcome between the two treatments were observed but a larger sample may be needed to obtain significance. The treatments were well tolerated but the compliance to the electromyographic biofeedback training program was low. A combination of both treatments could potentially benefit many women with vulvar vestibulitis.

Reliability and validity of self-reported symptoms for predicting vulvodynia.

Reed BD, Haefner HK, Harlow SD, Gorenflo DW, Sen A
Obstet Gynecol. 2006 Oct;108(4):906-913

OBJECTIVE: To evaluate the reliability and validity of self-reported symptoms to predict vulvodynia, compared with examination-based confirmation. **METHODS:** Between August 5, 2004, and December 13, 2004, 1,046 members of the University of Michigan Women's Health Registry were surveyed regarding the presence of symptoms suggestive of vulvodynia. Diagnoses of vulvodynia and of control status based on survey responses were made, and a subset of these respondents was evaluated in the office. **RESULTS:** One thousand forty-six of 1,447 (72.3%) eligible women, aged 19 to 92 years, completed the survey. Seventy-nine (7.6%) of the survey respondents who reported ongoing vulvar pain lasting more than 3 months were predicted to have vulvodynia, while women reporting no current pain with intercourse and no history of prolonged vulvar pain were predicted to be controls (N=543). Agreement between the history taken at the office and that reported on the survey was very good (reliability: Cohen's kappa=0.86, 95% confidence interval 0.73-0.99). Of the 28 women predicted to have vulvodynia who were examined in the office, 27 (96.4%) were confirmed to have vulvodynia, and 28 of the 34 (82.4%) asymptomatic women examined did not have increased vulvar sensitivity (Cohen's kappa=0.78, 95% confidence interval 0.64-0.92). **CONCLUSION:** Excellent reliability and validity of survey responses for predicting vulvodynia were demonstrated. **LEVEL OF EVIDENCE:** II-2.

Surgical treatment of vulvar vestibulitis syndrome: outcome assessment derived from a postoperative questionnaire.

Goldstein AT, Klingman D, Christopher K, Johnson C, Marinoff SC
J Sex Med. 2006 Sep;3(5):923-31

INTRODUCTION: Vulvar vestibulitis syndrome (VVS) is the most common pathology in women with sexual pain. Surgery for VVS was first described in 1981. Despite apparently high surgical success rates, most review articles suggest that surgery should be used only "as a last resort." Risks of complications such as bleeding, scarring, and recurrence of symptoms are often used to justify these cautionary statements. However, there are little data in the peer-reviewed literature to justify this cautionary statement. **AIMS:** To determine patient satisfaction with vulvar vestibulectomy for VVS and the rate of complications with this procedure. **METHODS:** Women who underwent a complete vulvar vestibulectomy

with vaginal advancement by one of three different surgeons were contacted via telephone by an independent researcher between 12 and 72 months after surgery. MAIN OUTCOME MEASURES: The primary outcome measurement of surgical success was overall patient satisfaction with surgery. Additional secondary outcome measurements included improvement in dyspareunia, changes in coital frequency, and occurrence of surgical complications. RESULTS: In total, 134 women underwent surgery in a 5-year period. An independent research assistant was able to contact 106 women, and 104 agreed to participate in the study. Mean duration since surgery was 26 months. A total of 97 women (93%) were satisfied, or very satisfied, with the outcome of their surgery. Only three patients (3%) reported persistently worse symptoms after surgery and only seven (7%) reported permanent recurrence of any symptoms after surgery. Prior to surgery, 72% of the women were completely asexual; however, after surgery, only 11% were unable to have intercourse. DISCUSSION: In this cohort of patients, there was a high degree of satisfaction with surgery for VVS. In addition, the risks of complications with this procedure were low, and most complications were transient and the risk of recurrence after surgery was also found to be low.

Causes of chronic vaginitis: analysis of a prospective database of affected women.

Nyirjesy P, Petyon C, Weitz MV, Marhew L, Culhane JF
Obstet Gynecol. 2006 Nov;108(5):1185-91

OBJECTIVE: To compare women with different chronic vaginal symptoms with a wide variety of sociodemographic, health, behavioral, and psychosocial characteristics. METHODS: Serially recruited subjects answered a questionnaire that asks about demographic information and symptoms and measures depression and stress scores. Patients underwent a standardized history, physical examination, and laboratory examination. Patients with recurrent vulvovaginal candidiasis, vulvar vestibulitis syndrome, desquamative inflammatory vaginitis, physiologic leukorrhea, and other diagnoses were compared with one another. Chi-square tests and one-way analysis of variance with Tukey honestly significant difference (HSD) post hoc analyses were used for categorical and continuous data analysis. RESULTS: Two hundred patients were enrolled in this study. The most common diagnoses were contact dermatitis (21%), recurrent vulvovaginal candidiasis (20.5%), atrophic vaginitis (14.5%), and vulvar vestibulitis syndrome (12.5%); 18% of women had 2 or more diagnoses. In the overall study sample, the mean age was 38.4 years, 78% were white, and 55% were college educated. Sixty-two percent had symptoms for over a year. Desquamative inflammatory vaginitis patients were older and less likely to be menstruating. Those with vulvar vestibulitis syndrome had more frequent complaints of dyspareunia. Recurrent vulvovaginal candidiasis patients felt that their symptoms had the greatest negative impact on work and social life. There were high rates of psychiatric disorder (43.5%), atopic disease (42.5%), and pain syndrome (56%) in all groups. CONCLUSION: Women with chronic vaginal symptoms have a variety of diagnoses, most of them noninfectious. LEVEL OF EVIDENCE: II-3.

Effects of sexual arousal on genital and non-genital sensation: a comparison of women with vulvar vestibulitis syndrome and healthy controls.

Payne KA, Binik YM, Pukall, CF, Thaler L, Amsel R, Khalife S
Arch Sex Behav. 2006 Nov 30; [Epub ahead of print]

The relationship between sexual arousal and sensory perception has been a topic largely neglected within the realm of human sexuality research. The present study assessed the influence of sexual arousal on genital and non-genital sensation in women. It also examined the theory that painful intercourse is associated with insufficient sexual arousal. A total of 20 healthy women and 20 women with Vulvar Vestibulitis Syndrome (VVS) underwent genital and non-genital sensory testing at baseline and in response to erotic and neutral stimulus films. Touch and pain thresholds were assessed at the vulvar vestibule, inside the labia minora, and on the volar surface of the forearm. Sexual arousal was assessed via the measurement of surface skin temperature changes of the labia minora using a labial thermistor clip. Participants also completed questionnaires pertaining to mood, pain, and sexual functioning. In response to the erotic stimulus, both groups evidenced a significant increase in physiological sexual arousal and vulvar sensitivity. Women with VVS reported a significantly lower desire to engage in

intercourse after having viewed the erotic film and reported lower levels of desire and arousal on questionnaire measures. Women with VVS also exhibited significantly more genital and non-genital pain sensitivity than healthy women across all conditions, in addition to more catastrophizing, hypervigilance, and fear of pain. Contrary to some theories, these data suggest that women with VVS are not lacking in physiological sexual arousal, and that physiological sexual arousal may actually increase vulvar sensation. Lack of subjective sexual arousal, however, may yet be implicated in vulvar pain during intercourse.

Vulvar vestibulitis syndrome.

Gardella C

Curr Infect Dis Rep. 2006 Nov;8(6):473-480

Vulvar vestibulitis syndrome (VVS) is one of the most common causes of genital pain and pain with sexual intercourse, affecting up to 15% of women. The syndrome is characterized by severe pain on vestibular touch or attempted vaginal entry, exquisite tenderness to palpation with a cotton swab, and often subtle physical findings confined to vestibular erythema. The etiology of VVS is unknown. However, it is probably best to consider VVS as a chronic local inflammatory condition with a wide variety of etiologic causes. The heterogeneity of potential etiologies for VVS results in the use of multiple treatment regimens in clinical practice. Scientifically rigorous studies are sorely needed to determine the best treatment approach.

Vulvar pain syndromes: vestibulodynia.

Stone-Godena T

J Midwifery Womens Health. 2006 Nov-Dec;51(6):502-9

Chronic pain anywhere on the body can be debilitating and demoralizing. When the pain is associated with sexuality, it can erode self-esteem and diminish relationships. Vestibulodynia (pain in the vulvar vestibule) is poorly understood and presents a clinical challenge to the provider. Although the etiology of vestibulodynia is unclear, and randomized controlled trials of therapies are lacking, the knowledge of current theories and treatments will assist providers in caring for women with this enigmatic problem.

Dyspareunia.

Macneill C

Obstet Gynecol Clin North Am. 2006 Dec;33(4):565-77.

[No abstract listed.]

The Vulva: Anatomy, Physiology, and Pathology

Farage, MA, Maibach, HI

August 2006/ ISBN: 0849336082 / 416 pp.

Informa Healthcare/Taylor and Francis

http://www.crcpress.com/shopping_cart/products/product_detail.asp?sku=3608&parent_id=&pc=

Addressing common misconceptions concerning the dermatologic composition and assessment of vulvar skin, this book is a unique compilation of current research and information on the anatomy, physiology, toxicology, microbiology, and diagnosis of the vulva and surrounding anatomical structures. A must-have source for anyone treating female patients, this source considers age and ethnicity factors and analyzes a wide range of symptoms, skin conditions, and diseases that physicians may encounter when caring for female patients.

What is new in neuropathic pain?

Davis MP

Support Care Cancer. 2006 Nov 28; [Epub ahead of print]

INTRODUCTION: Neuropathic pain occurs in 1% of the population and is difficult to manage. Responses to single drugs are limited in benefit. Thirty percent will fail to respond altogether. This is a review of newer drugs and treatment paradigms. **METHODS:** A literature review was performed pertinent to new drugs and treatment algorithms in the management of neuropathic pain. **RESULTS:** New information on opioids (tramadol and buprenorphine) suggests benefits in the management of neuropathic pain and has increased interest in their use earlier in the course of illness. Newer antidepressants, selective noradrenaline, and serotonin reuptake inhibitors (SNRIs) have evidence for benefit and reduced toxicity without an economic disadvantage compared to tricyclic antidepressants (TCAs). Pregabalin and gabapentin are effective in diabetic neuropathy and postherpetic neuralgia. Treatment paradigms are shifting from sequential single drug trials to multiple drug therapies. Evidence is needed to justify this change in treatment approach. **CONCLUSION:** Drug choices are now based not only on efficacy but also toxicity and drug interactions. For this reason, SNRIs and gabapentin/pregabalin have become popular though efficacy is not better than TCAs. Multiple drug therapies becoming an emergent treatment paradigm research in multiple drug therapy are needed.

The role of sodium channels in neuropathic pain.

Rogers M, Tang L, Madge DJ, Stevens EB

Semin Cell Dev Biol. 2006 Oct 28; [Epub ahead of print]

Our knowledge of the ion channels, receptors and signalling mechanisms involved in pain pathophysiology, and which specific channels play a role in subtypes of pain such as neuropathic and inflammatory pain, has expanded considerably in recent years. It is now clear that in the neuropathic state the expression of certain channels is modified, and that these changes underlie the plasticity of responses that occur to generate inappropriate pain signals from normally trivial inputs. Pain is modulated by a subset of the voltage-gated sodium channels, including Nav1.3, Nav1.7, Nav1.8 and Nav1.9. These isoforms display unique expression patterns within specific tissues, and are either up- or down-regulated upon injury to the nervous system. Here we describe our current understanding of the roles of sodium channels in pain and nociceptive information processing, with a particular emphasis on neuropathic pain and drugs useful for the treatment of neuropathic pain that act through mechanisms involving block of sodium channels. One of the future challenges in the development of novel sodium channel blockers is to design and synthesise isoform-selective channel inhibitors. This should provide substantial benefits over existing pain treatments.

Glutamate receptors and pain.

Bleakman D, Alt A, Nisenbaum ES

Semin Cell Dev Biol. 2006 Oct 28; [Epub ahead of print]

Pain is an important survival and protection mechanism for animals. However, chronic/persistent pain may be differentiated from normal physiological pain in that it confers no obvious advantage. An accumulating body of pharmacological, electrophysiological, and behavioral evidence is emerging in support of the notion that glutamate receptors play a crucial role in pain pathways and that modulation of glutamate receptors may have potential for therapeutic utility in several categories of persistent pain, including neuropathic pain resulting from injury and/or disease of central (e.g., spinal cord injury) or peripheral nerves (e.g., diabetic neuropathy, radiculopathy) and inflammatory or joint-related pain (e.g., rheumatoid arthritis, osteoarthritis). This review focuses on the role of glutamate receptors, including both ionotropic (AMPA, NMDA and kainate) and metabotropic (mGlu1-8) receptors in persistent pain states with particular emphasis on their expression patterns in nociceptive pathways and their potential as targets for pharmacological intervention strategies.

Vulvar Dermatoses

Pimecrolimus cream 1% in the treatment of lichen sclerosis.

Nissi R, Eriksen H, Risteli J, Niemimaa M
Gynecol Obstet Invest. 2006 Nov 2;63(3):151-154 [Epub ahead of print]

Background:Lichen sclerosis (LS) is a chronic inflammatory skin condition, which most commonly causes dysuria, pruritus and soreness of the vulval and perianal areas. Potent topical corticosteroids are used for the treatment of LS, but it is well known that they inhibit collagen synthesis and cause skin atrophy as a side effect. **Methods:** The present pilot study evaluated the efficacy and safety of pimecrolimus cream 1% applied twice daily for up to 6 months in 29 women with severe LS. **Results:** Of the 26 subjects who completed the follow-up period, 42% (11/26) were in complete remission with relief from itchiness, pain and inflammation. A 3.5-fold increase in type I collagen synthesis and a 7.5-fold increase in type III collagen synthesis of the affected areas was detected after 2 months of pimecrolimus treatment. There were no systemic adverse reactions, although mild local skin reactions were reported by 50% of the patients. Blood concentrations of pimecrolimus were checked in 10/26 patients (39%) and were undetectable in all cases. **Conclusions:** Patient-applied 1% pimecrolimus cream is safe and effective for the treatment of LS.

Multicentre, phase II trial on the safety and efficacy of topical tacrolimus ointment for the treatment of lichen sclerosis.

Hengge UR, Krause W, Hofmann H, Stadler R, Gross G, Meurer M, Brinkmeier T, Frosch P, Moll I, Fritsch P, Muller K, Meykadeh N, Marini A, Ruzicka T, Gollnick H
Br J Dermatol. 2006 Nov;155(5):1021-8

BACKGROUND: Lichen sclerosis is a chronic inflammatory autoimmune disease causing significant sclerosis, atrophy and pruritus. Treatment remains unsatisfactory, with potent corticosteroids being the most effective therapy. **OBJECTIVES:** To conduct a multicentre, phase II trial to assess the safety and efficacy of tacrolimus ointment 0.1% for the treatment of lichen sclerosis with a follow-up period of 18 months at 10 university and teaching hospitals in Germany and Austria. **METHODS:** Eighty-four patients (49 women, 32 men and three girls) aged between 5 and 85 years with long-standing, active lichen sclerosis (79 with anogenital and five with extragenital localization) were treated with topical tacrolimus ointment 0.1% twice daily for 16 weeks. Computerized analysis of the lesional area was performed. The primary endpoint was clearance of active lichen sclerosis. Secondary endpoints were time to optimal response, reduction of sclerosis and duration of remission. **RESULTS:** The primary endpoint (clearance of active lichen sclerosis) was reached by 43% of patients at 24 weeks of treatment. Partial resolution was reached in 34% of patients. Maximal effects occurred between week 10 and 24 of therapy. Treatment led to a significant reduction of the total lesional area ($P < 0.01$) and to a significant decline in the total symptom score ($P < 0.005$). Symptoms (e.g. itching) and findings (erythema, erosions and induration) showed significant improvement. No serious adverse events were observed. There were three (9%) recurrences during the follow-up period. **CONCLUSIONS:** Topical tacrolimus ointment 0.1% was safe and effective for the treatment of long-standing active lichen sclerosis.

Cytokine alterations in lichen sclerosis: an immunohistochemical study.

Farrell AM, Dean D, Millard PR, Charnock FM, Wojnarowska F
Br J Dermatol. 2006 Nov;155(5):931-40.

BACKGROUND: Although the histology of lichen sclerosis is characteristic, the precise nature of the inflammatory changes and the signals provoking them is uncertain. **OBJECTIVES:** To delineate the inflammatory changes in lichen sclerosis more accurately by studying cytokine changes. **METHODS:** An immunohistochemical study of 12 specimens of genital lichen sclerosis and one specimen of extragenital lichen sclerosis was undertaken using monoclonal antibodies to interferon (IFN)-gamma, IFN-gamma

receptor, tumour necrosis factor (TNF)-alpha, interleukin (IL)-1alpha, IL-2 receptor (CD25), intercellular adhesion molecule-1 (ICAM-1) and its ligand CD11a. Control specimens were seven specimens of normal vulva obtained during gynaecological procedures, three specimens of normal skin, adjacent uninvolved thigh from three of the patients with lichen sclerosis, five specimens of nonvulval psoriasis, four specimens of nonvulval lichen planus and two specimens from chronic wounds. RESULTS: The lichen sclerosis specimens demonstrated slightly increased staining for IFN-gamma within the epidermis compared with the normal vulva and nonvulval skin. There was increased dermal staining for IFN-gamma both within the pale zone of the upper dermis and within the inflammatory zone below this. We confirmed our previous demonstration that in lichen sclerosis HLA-DR immunostaining is increased in association with vascular endothelium, the inflammatory cell infiltrate and around the keratinocytes. The areas of the epidermis with the strongest immunostaining for HLA-DR generally also had the strongest staining for IFN-gamma. In the lichen sclerosis specimens the zone of inflammation also demonstrated increased immunostaining for TNF-alpha, IL-1alpha, IFN-gamma receptor, CD25, CD11a and ICAM-1 while the zone of sclerosis demonstrated a smaller increase in immunostaining for IFN-gamma receptor, TNF-alpha, CD11a and ICAM-1, and the epidermis demonstrated increased staining for ICAM-1. CONCLUSIONS: The increased staining for IFN-gamma, TNF-alpha, IL-1alpha, IFN-gamma receptor, CD25, CD11a and ICAM-1 suggest that the cytokine response in lichen sclerosis shares characteristics of the cytokine response in lichen planus and chronic wounds.

Prevalence of vulval lichen planus in a cohort of women with oral lichen planus: an interdisciplinary study.

Belfiore P, Di Fede O, Cabibi D, Campisi G, Amaru GS, De Cantis S, Maresi E
Br J Dermatol. 2006 Nov;155(5):994-8

BACKGROUND: Lichen planus (LP) is a mucocutaneous inflammatory dermatosis that frequently involves the oral and genital mucosae. Patients with LP affecting these sites are often seen by oral medicine specialists or gynaecologists who work in isolation and depend heavily on histopathologists to help them in confirming the diagnosis. There are few studies in the literature combining the experiences of these specialists who share the care of patients with both oral and genital LP. OBJECTIVES: To estimate the prevalence of vulval LP (VLP) in a cohort of patients with histologically confirmed oral LP (OLP). METHODS: The study group consisted of 42 women histologically diagnosed with OLP. The mean age was 60.5 years (range 27-81). They underwent genital examination, colposcopy and vulvoscopy. For the histological confirmation of clinical VLP biopsies were performed whenever a clinical lesion was found. Oral and genital biopsy specimens were processed through histological and immunohistochemical staining. Histological diagnoses of LP were made according to the modified World Health Organization histopathological criteria proposed by van der Meij and van der Waal for the diagnosis of OLP, and extended to VLP. Patients with clinical evidence, but without the histological confirmation of OLP and VLP, were excluded from the study group. RESULTS: Thirty-two vulval and one vaginal biopsy specimens were obtained. Histological diagnoses were confirmed in 24 of 32 (75%) patients who underwent a vulval biopsy: these represent 57% (24 of 42) of the study group. Of the 12 patients free of symptoms such as itching, burning and dyspareunia, but with clinical vulval lesions, 11 (92%) had histological confirmation of VLP. Vulval lichen sclerosis was ascertained in five of 32 (16%) cases. CONCLUSIONS: This study showed a 57% prevalence of VLP in selected patients with OLP. The high prevalence of VLP of 92% in the women who were free of vulval symptoms confirmed the usefulness of this careful integrated approach.

Infectious Disease

Management of recurrent vulvovaginal candidiasis: unresolved issues.

Sobel JD

Curr Infect Dis Rep. 2006 Nov;8(6):481-6

The introduction and widespread use of long-term maintenance suppressive fluconazole prophylaxis for recurrent vulvovaginal candidiasis (RVVC) has improved the quality of life for thousands of women worldwide. Moreover, the regimen is no longer expensive, and it is safe and well tolerated. However, the regimen frequently fails to cure the condition and serves only as an effective control measure in many cases. Moreover, some women are unable to tolerate the regimen, and new curative approaches are needed. This review presents the limitations of this suppressive regimen and a discussion of the possible reasons for these limitations and failure to cure. Also, the rationale for new drug development is reviewed here.

A 5-year (2000-2004) epidemiological survey of Candida and non-Candida yeast species causing vulvovaginal candidiasis in Graz, Austria.

Paulitsch A, Weger W, Ginter-Hanselmayer G, Marth E, Buzina W

Mycoses. 2006 Nov;49(6):471-5

Vulvovaginal candidiasis (VVC) is a common disease. The majority of cases is caused by *Candida albicans*, but in recent years an increase has been observed in the frequency of non-*albicans* *Candida* infections, especially due to *C. glabrata* and *C. tropicalis*. The aim of the study was to assess the prevalence of non-*albicans* *Candida* infections in patients suffering from VVC. Therefore, the statistical data of culture-confirmed VVC ascertained at the Institute of Hygiene (Medical University Graz) have been studied. Altogether, 10,463 samples from patients with vulvovaginal complaints were analysed in the years 2000-2004, a number of 3184 proved to be culture-positive for yeast. *Candida albicans* was the most prevalent cause in 87.9% of all cases. Non-*albicans* *Candida* yeast were detected in 12.1%, mainly *C. glabrata* and *Saccharomyces cerevisiae*. During a 1-year period 185 patients showed more than one episode of VVC. Patients aged 21-40 years were significantly more prone to suffer from VVC compared with other age-related groups.

Fluconazole versus 3-day clotrimazole in the treatment of sporadic and recurrent vulvovaginal candidiasis.

Coric M, Barisic D, Lovric H

Int J Gynaecol Obstet. 2006 Nov;95(2):171-2. Epub 2006 Aug 17

[No abstract listed.]

Glucose in vaginal secretions before and after oral glucose tolerance testing in women with and without recurrent vulvovaginal candidiasis.

Ehrstrom S, Yu A, Rylander E

Obstet Gynecol. 2006 Dec;108(6):1432-7.

OBJECTIVE: To measure the change of glucose in vaginal secretions during glucose tolerance testing in women with recurrent vulvovaginal candidiasis and in healthy control subjects. **METHODS:** Thirty-eight women with recurrent vulvovaginal candidiasis and 45 healthy, age-matched controls completed a health questionnaire regarding general and gynecologic health and food and alcohol habits. They all underwent an oral glucose tolerance test and a vaginal examination. Vaginal secretion was collected from the proximal part of the vagina. Glucose in plasma and in vaginal secretions were measured at fasting and after 2 hours and analyzed with the hexokinase method. A sample size analysis showed that the number of subjects included in the study was sufficient for a beta value of 0.80, at the significance level of

alpha=.05, at a difference in glucose in vaginal secretions of 30 % after oral glucose tolerance test. RESULTS: In healthy women, the median level of glucose in vaginal secretions was 5.2 mM before and 3.7 mM after oral glucose tolerance test, and plasma glucose was 5.0 mM before and 5.8 mM after oral glucose tolerance test. No significant difference was seen regarding change of glucose level in vaginal secretions and plasma glucose after testing, compared with before oral glucose tolerance testing. CONCLUSION: There were no differences between women with recurrent vulvovaginal candidiasis and control subjects regarding change in glucose level in vaginal secretions or in plasma during oral glucose tolerance test. LEVEL OF EVIDENCE: II-2.

Basic Science

Relationship of the uterosacral ligament to the sacral plexus and to the pudendal nerve.

Siddique SA, Gutman RE, Schon Ybarra MA, Rojas F, Handa VL
Int Urogynecol J Pelvic Floor Dysfunct. 2006 Nov;17(6):642-5. Epub 2006 May 30

We describe the anatomy of the uterosacral ligament with respect to the sacral plexus. In six adult female embalmed cadavers, we identified the uterosacral ligament and its lateral nerve relations. Using the ischial spine as the starting point and measuring along the axis of the uterosacral ligament, we noted that the S1 trunk of the sacral plexus passes under the ligament 3.9 cm [95% confidence interval (CI), 2.1-5.8 cm] superior to the ischial spine. The S2 trunk passes under the ligament at 2.6 cm (95% CI; 1.5, 3.6 cm), the S3 trunk passes under the ligament at 1.5 cm (95% CI; 0.7, 2.4 cm), and the S4 trunk passes under the ligament at 0.9 cm (95% CI; 0.3, 1.5 cm) superior to the ischial spine. The pudendal nerve forms lateral to the uterosacral ligament. Our data demonstrate that the S1-S4 trunks of the sacral plexus, not the pudendal nerve, are vulnerable to injury during uterosacral ligament suspension.

Sulcus nervi dorsalis penis/clitoridis: anatomic structure and clinical significance.

Sedy J, Nanka O, Belisova M, Walro JM, Jarolim L
Eur Urol. 2006 Nov;50(5):1079-85. Epub 2006 Feb 24

OBJECTIVES: The aim of this study was to correlate the anatomic and clinical significance of the prepubic course of dorsal nerve of penis and its groove on the pubic bone from the perspective of the surgeon. METHODS: The course of the dorsal nerve of the penis/clitoris was studied in six male and six female formalin-fixed cadavers. Several parameters of the pubis were quantified and analysed in 286 isolated pelvises. RESULTS: The course of the dorsal nerve of the penis is described in detail. This pubic sulcus was present in a majority of the pelvises examined. The dorsal nerve of the penis filled this groove, which we term the "sulcus nervi dorsalis penis/clitoridis." In contrast, the dorsal nerve and artery of the clitoris coursed in this groove in women. CONCLUSIONS: The course of dorsal nerve of the penis is described in detail including a previously unreported pubic structure-"sulcus nervi dorsalis penis/clitoridis." In the majority of individuals, the dorsal nerve of the penis/clitoris courses through the sulcus in the pubis. Based on the anatomy of the pelvic region, compression of the dorsal nerve is more apt to occur at the inferior border of the pubis or in the pubic sulcus than in the pudendal canal.