Vulvodynia: a modern perspective on the problem

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Vulvodynia is a chronic persistent pain syndrome that affects the vulvar area and lasts more than 3 months without a clearly identifiable cause. Provoked localized pain in the vulval vestibule is the most prevalent type of vulvodynia and is interpreted as dysfunctional pain. Peripheral and central sensitization contribute to the onset and persistence of vulvodynia. Chronic pain predictably causes significant issues for a woman's psychological, sexual and physical health. The diagnosis of vulvodynia includes an assessment of all the factors associated with pain. Successful treatment of vulvodynia goes beyond identifying one trigger and prescribing one type of treatment. Patient-centered interdisciplinary approach is the most promising, including psychotherapy, lifestyle changes, drug therapy.

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In 2003, the International Society for the Study of Vulvovaginal Disease (ISSVD) defined vulvodynia as a clinical syndrome of a multifactorial nature, characterized by «discomfort in the vulva in the form of burning pain of a permanent nature in the absence of visible changes or clinically significant neurological disorders» [1]. In 2015, the International Society for the Study of Women's Sexual Health (ISSWSH), and the International Pelvic Pain Society (IPPS) made terminological clarifications with the allocation of persistent pain syndrome in the vulva associated with a specific cause (infection, trauma, etc.), and essential vulvodynia, which is defined as pain in the vulva area lasting at least 3 months in the absence of tissue damage [2]. Vulvodynia is diagnosed after excluding other possible causes of pain. The classification of vulvodynia is currently based on the description of the pain syndrome. Pain is often described as burning, irritating, pressing, or stabbing. It can be localized in the clitoris (clitorodynia), in the vestibule of the vagina (vestibulodynia), or have a generalized character. According to the presence of a provoking factor, vulvodynia can be provoked, unprovoked, and mixed [2, 3]. Provoked pain, localized in the area of the vestibule of the vagina, is the most common type of vulvodynia [3]. We present the classification of vulvodynia.

Consensus terminology and classification of persistent pain in the vulva and vulvodynia [2]

A. Persistent pain in the vulva caused by a specific disease[1]:

- infection (recurrent candidiasis, herpes, etc.);
- inflammatory (sclerosing versicolor, lichen planus, etc.);
- neoplastic (Paget's disease, squamous cell carcinoma, etc.):
- neurological (postherpetic neuralgia, compression or nerve damage, neuroma, etc.);
- trauma (damage to the female genital organs, obstetric trauma, etc.);
- iatrogenic causes (postoperative complications, chemotherapy, radiation, etc.);
- hormonal disorders (genitourinary menopausal syndrome, formerly known as vulvovaginal atrophy; lactation amenorrhea, etc.).

B. Vulvodynia – pain in the vulva area lasting ⩾3 months, without a clear identifiable cause, in the presence of potentially vulvodynia-related factors.

Classification:

- by localization:
  - localized (for example, vestibulodynia, clitorodynia),
  - generalized (common),
  - mixed (generalized and localized);
- by the presence of a provoking factor:
  - provoked (for example, contact, during penetration)
  - spontaneous (unprovoked)
  - mixed (provoked and spontaneous);
- by origin:
  - primary,
  - secondary;
- by the nature of the course:
  - intermittent
  - persistent,
  - continuous,
  - immediate,
  - delayed.

[1]Women can have both a specific disorder that causes pain in the vulva (for example, lichen sclerosis) and vulvodynia.

Vulvodynia is a frequent cause of dyspareunia, which can be superficial (introital) and deep (vaginal). It is believed that «provoked» vestibulodynia leads to introital dyspareunia in 8% of women of reproductive age [4].

In 2013, the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) presented diagnostic criteria for sexual dysfunction, known as genito-pelvic pain / penetration disorder (GPPPD). This diagnosis combined two previously isolated disorders – dyspareunia and vaginismus [5]. Vulvodynia is not classified as a female sexual dysfunction, but this condition can cause it [6].

Vulvodynia is observed in 10–28% of women of childbearing age [7]. In the work of V. Harlow et al. [8] it was shown that in women aged 18 to 40 years, burning in the vulva and / or pain in the genitals associated with sexual intercourse led to sexual disorders. In previous studies, it was found that Spanish women noted pain in the vulva more often than women in other European countries. Women with vulvodynia experience difficulties in sexual relations due to inability to engage in sexual contact [9]. Approximately 25% of women have a favorable course of vulvodynia, up to complete remission [10]. The annual economic burden of vulvodynia in the United States is estimated at $31–72 billion. [11]

Etiology and pathophysiological mechanisms

Vulvodynia is characterized by an uncertain and multifactorial etiology, which justifies the need for a multidisciplinary approach to its diagnosis and treatment. In this regard, we should mention three main components of chronic pain – biological, psychological and social [11] (see Figure). There are discussions about whether the pain is caused by local damage/trauma or by an inadequate peripheral and / or maladaptive central mechanism of pain modulation. Locally, the initial trigger causes inflammation and/or damage to the vagina. This leads to stimulation and damage to tissue receptors (nociceptive pain) [12]. Cases are described when symptoms of vulvodynia were associated with hormonal effects (taking birth control pills, menopause, childbirth). In a study by U. Wesselmann et al. [13], it was found that in women with vulvodynia, the intensity of pain decreases in the preovulatory phase of the menstrual cycle and increases in the premenstrual phase. Chronic inflammation can lead to nociceptive pain due to peripheral sensitization, and to neuropathic pain with hyperalgesia and allodynia, which develops due to central sensitization [14]. Possible causes of pain include damage or inflammation of the superficial tissues of the vulva, an increase in the number and sensitivity of nociceptors to the action of damaging stimuli [15], an increase in the level of pro-inflammatory substances [16], genetic predisposition [17], weakness of the pelvic floor muscles, their spasm or instability [18].

Some authors believe that vulvodynia is a somatoform or dysfunctional pain disorder, i.e. the type of pain associated with it is similar to fibromyalgia, interstitial cystitis, and irritable bowel syndrome [19].

Vulvodynia can also be accompanied by autonomic dysfunction, but it is not known whether this dysfunction is a cause or a consequence of the pain syndrome [20]. It is reported that autonomic dysfunction in women with vulvodynia is manifested in tachycardia and arterial hypotension [21].

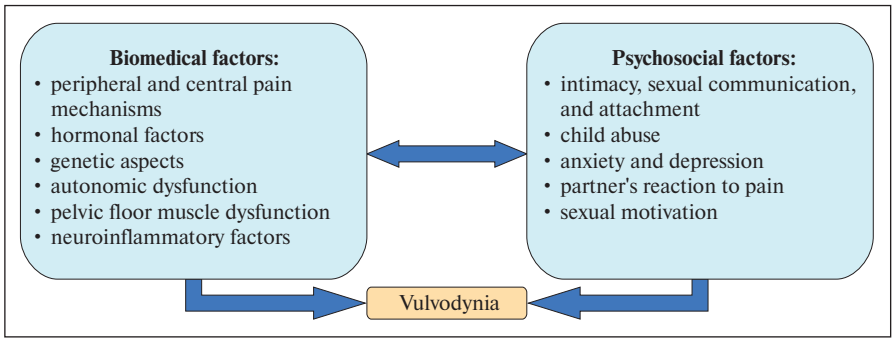
Undoubtedly, psychological factors play a significant role in triggering the pathophysiological cascade in vulvodynia. These include abuse in childhood (physical, emotional, and/or sexual abuse) [22], as well as problems in the family, at work, and others. All these factors lead to a reduced mood background and, as a result, to anxiety and depressive disorders. Such women try to avoid any social contact, withdraw into themselves and completely immerse themselves in their disease [23].

The catastrophization of pain in vulvodynia deserves special mention, since it is a factor enhancing the perception of pain. Catastrophization of pain is characterized by constant thinking about it, a sense of helplessness, anxiety, increased negative consequences, and inability to suppress the fear associated with pain.

Diagnosis

The diagnosis of «vulvodynia» is made after excluding other possible causes of pain. Since vulvodynia is a multifactorial sensation, including sensory, affective and behavioral components, it is necessary to conduct the examination in the settings that ensure confidentiality of the information received by the doctor. During the survey, the nature, intensity, time of occurrence and duration of the pain syndrome, possible causes associated with the development of the disease, life history, social status, sexual history, and data on the treatment performed are specified. It is important to evaluate affective and behavioral components of pain (emotional state and pain behavior).

Testing with a cotton swab («tampon test») is used to detect soreness when touching the vagina [24]. This test is also used to determine the intensity of pain (mild, moderate or severe) and to clarify whether the local or generalized form of vulvodynia is in question. If necessary, the presence of vulvovaginal infection should be excluded [25]. The use of vulvoscopy is optional, as is the use of 3–5% acetic acid, which can cause a severe allergic reaction in a patient [26].



A biopsychosocial concept of vulvodynia

Treatment

There is no specific treatment for vulvodynia. Methods aimed at correcting the sources of pain and concomitant psychological disorders have not been studied in randomized controlled trials.

Basic principles of vaginal hygiene

It is necessary to take measures for delicate intimate hygiene of the genitals: to wear cotton underwear, avoid substances and procedures that irritate the vulva (perfumes, shampoos, showers), use soft, non-irritating soap. The vulva can only be cleaned with clean water, followed by the use of a moisture-retaining emollient to prevent excessive drying of the vaginal mucosa and preserve its barrier function. During menstruation, it is recommended to use delicate sanitary pads made of cotton. After urination, the vagina must be dried and cleaned. Before sexual intercourse, it is recommended to lubricate with non-irritating agents [27].

Non-drug treatment

The consensus-based recommendations of the 4th International Consultation on Sexual Medicine include pelvic floor physiotherapy and psychosocial intervention as first-line treatments for vulvodynia [28].

Psychosocial interventions include cognitive behavioral therapy (CBT), pain management techniques, sexual therapy, and psychological pain management techniques. All of these approaches can be used individually or in combination. Earlier use of behavioral skills that help overcome pain or its consequences reduces pain, improves sexual function and relationships between partners, and increases sexual well-being [29].

CBT helps correct the ideas about the nature of pain that may hinder recovery, change social reinforcement of pain behavior, reduce dependence on analgesics and need for medical care, and improve daily household and professional activity [30].

Pelvic floor physiotherapy is aimed at restoring normal muscle function by enhancing muscle proprioception, relaxation, increasing elasticity, and reducing the sensitivity of nociceptors [31]. It includes several techniques that can be used separately or in combination. The most common among them are electromyography/biofeedback; manual therapy; training aimed at eliminating stimuli and improving sexual function; techniques for managing pain and maintaining urogynecological health; electrotherapy [32].

Medical treatment methods

Various medications are used to relieve the pain syndrome. Since pain in vulvodynia is neuropathic, it is most appropriate to prescribe tricyclic antidepressants, in particular amitriptyline at a dose of 10–25 mg daily [33]. The therapy should begin with a small dose, followed by its slow titration and increase over several weeks.

There is evidence of a positive effect of anticonvulsant drugs – gabapentin, pregabalin, lamotrigine. Relief of pain syndrome in vulvodynia is observed in 50–82% of cases [34, 35].

Before starting the treatment with antidepressants or anticonvulsants, women should be explained the need for contraceptives.

The use of oral nonsteroidal anti-inflammatory drugs in vulvodynia was ineffective [36].

Combination therapy

The effectiveness of various pain management techniques has been studied using a multidisciplinary approach [37]. The basis of treatment of vulvodynia is a combination of psychological methods, drug treatment, local therapy, electrical nerve stimulation, injections of platelet-rich blood autoplasma, laser therapy, injections of botulinum toxin A. If conservative therapy is ineffective, surgical methods are used.

Local therapy

A promising method of influencing the pain syndrome in vulvodynia is hyaluronic acid. Vaginal gel with hyaluronic acid can be considered an effective alternative (non-hormonal) therapy used to reduce the symptoms of vaginal dryness, which are accompanied by dyspareunia, itching, unpleasant odor and discomfort [38]. In 2015, a method of treating diseases of the vaginal mucosa and vulva was patented, which includes injections of hyaluronic acid and its salts into the muscles of the vagina or the mucous membrane of its posterior wall. This method can be used for the treatment of vaginal atrophy, vulvar vestibulitis syndrome (vestibulodynia), chronic inflammatory processes, as well as for the relief of dyspareunia [39].

Local anesthetics (2–5% lidocaine solution), creams with estrogens and tricyclic antidepressants are often used in treating vulvodynia. In some patients, injections of a combination of methylprednisolone and bupivacaine at the trigger points are effective. Ointments are usually better tolerated than creams, since creams contain preservatives and stabilizers and often cause a burning sensation when applied [27].

Electrical nerve stimulation

Percutaneous electrical nerve stimulation is effective in chronic pain. In women with vestibulodynia this method led to a decrease in pain and improvement in sexual function [40].

Treatment with platelet-rich plasma

Platelet-rich plasma (PRP) injections are a potentially effective treatment. PRP activates pluripotent stem cells in the injection area, which leads to rejuvenation of damaged or undamaged vaginal tissue [41].

Surgical treatment

Women with vulvodynia resistant to conservative therapy may benefit from surgery. Local excision of the vagina (vestibulectomy) is currently considered as an effective method of treating vulvodynia, but this method is usually used in extreme cases due to its invasiveness and high risk of complications (tissue trauma and scarring) [42].

Laser therapy

An alternative to radical vestibulectomy is laser ablation of the vaginal epithelium using a KTP-Nd:YAG laser and a CO_2 laser. The results of laser therapy in vulvodynia are comparable to those of vestibulectomy [43].

Botulinum Toxin A injections

In a study by F. Pelletier et al. [44] it was found that injections of 100 units of botulinum toxin A are an effective method of treating vestibulodynia with the preservation of a positive result for 2 years. Injections of botulinum toxin A significantly reduces pain and has a beneficial effect on the quality of life and sexual function of patients.

Conclusion

Vulvodynia is one of the clinical forms of chronic pelvic pain, the manifestations of which consist of a combination of biological, psychological and social factors that affect a woman's health. Treatment of women with vulvodynia should be individualized and multidisciplinary, including not only drug therapy, but also various psychological techniques. Understanding the biopsychosocial model of pain helps manage the symptoms of vulvodynia.

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