DOI - 10.21276/obgyn.2023.10.1.2 *ISSN Print – 2454-2334; ISSN Online – 2454-2342*

REVIEW ARTICLE

Vulvodynia, sexuality and couple relationship: a literature review

Susana Patrícia Lima Oliveira, Daniela Filipa Lima Oliveira, Marta Andrea Ferreira Fernandes, Cláudia Margarida Nascimento Marques, SuzanaCristina Perdigão dos Santos Lucas

Corresponding author: Dr Susana Lima Oliveira, MD, Department of Obstetrics and Gynaecology, Centro Hospitalar Tondela-Viseu, Viseu, Portugal. Full address: Rua Penedo da Saudade, number 66, Pascoal, Abraveses, 3515-219 Viseu, Portugal; Email – susana.limaoliveira91@gmail.com

ABSTRACT

Objectives: Through this essay, the author intends to carry out a literature review on the topic "vulvodynia, sexuality and couple relationship", as it is a contemporary subject that is still much discussed by the scientific society due to its uncertain etiopathogenesis and treatment in general of limited effectiveness. **Methods:** Bibliographical research on MEDLINE - PubMed publications was made and scientific articles on the keywords "vulvodynia", "sexuality" and "couples therapy" were gathered and analysed. The bibliographic references of the selected review articles were also reviewed. **Results:** Vulvodynia is a complex, chronic, and idiopathic medical condition that negatively affects all aspects of women´s well-being as well as their partner´s. Despite female social stigma and difficulties in clinical diagnosis due to the absence of physical signs during a medical examination or non-existing tracking exams or validation, it is estimated that 8% of the population suffers from this disease. This kind of diagnosis is usually based on the exclusion of other causes, supported on a minimum three-month vulvar pain report, and sustained on a positive cotton swab test. Although scientific research is constantly evolving, knowledge about the pathophysiology is currently still scarce. Regarding therapeutics, besides the significant inventory of possible solutions, there isn't a universal cure and results tend to be insufficient. **Conclusions:** It stands mandatory to educate a wide range of health care professionals, from primary care to gynaecology, pain medicine, mental and sexual health specialists. It is also essential that this pathology is precociously diagnosed and treated in an efficient multidisciplinary way.

Keywords: Vulvodynia, sexuality, couples therapy.

Vulvodynia is a complex, chronic and idiopathic medical condition [1, 2], depicted according to recent terminology as "vulvar pain of at least three months´ duration, without clear identifiable cause, which may have potential associated factors" [3]. This condition, which has a very negative impact on all domains of women and their partner´s quality of life - physical, psychological, sexual, and couple interaction can be felt as much more than just a painful physical experience. Nevertheless, therapeutic success is restricted, and vulvodynia often becomes a chronic problem with psychosocial implications [1].

Through this essay, the author intends to carry out a literature review on the topic "vulvodynia, sexuality and couple relationship", as it is a contemporary subject that is still much discussed by the scientific society due to its uncertain etiopathogenesis and treatment in general of limited effectiveness.

Materials and methods

It is vital to point out that bibliographical research on MEDLINE - PubMed publications was made and scientific articles on the keywords "vulvodynia", "sexuality" and "couples therapy" were gathered and analysed. No time

Received: 5th October 2022, **Peer review completed**: 1st January 2023, **Accepted:** 3rd March 2023.
Oliveira SPL, Oliveira DPL, Fernandes MAF, Marques CMN, Lucas SCP. Vulvodynia, sexuality and couple relationship: a literature review. The New Indian Journal of OBGYN. 2023; 10(1): 4-17.

limits or methodological types of scientific studies were applied. The bibliographic references of the selected review articles were also reviewed.

The main text of this article is organised in the following consecutive sections: definition and epidemiology, etiopathogenesis, diagnosis, and therapeutic approaches. It provides a detailed overview of the different spheres of this medical condition, emphasizes the updated evidence in the therapeutic scope, and demonstrates their effectiveness or ineffectiveness based on the original studies.

Definition and epidemiology –

In 2015, the general consensus among 3 societies - International Society for the Study of Vulvovaginal Disease (ISSVD), International Society for the Study of Women's Sexual Health (ISSWSH), and International Pelvic Pain Society (IPPS), has led to the update of vulvodynia´s definition and classification, portraying it as "vulvar pain of at least three months´ duration, without clear identifiable cause, which may have potential associated factors" [3].

With respect to classification, it added descriptors that assessed this medical condition in terms of: a) location: localized (e.g. vestibulodynia, clitorodynia) or generalized or mixed; b) cause: provoked (vaginal penetration, contact) or spontaneous or mixed; c) symptom´s onset: primary (from the first vulvar touch) or secondary (after normal function period); d) temporal pattern: intermittent, persistent, constant, immediate, delayed [3]. Such a decision emphasizes a change in the previous paradigm, attributing vulvodynia´s development and persistence to the culmination of a biopsychosocial process of multi-factor interaction - hormonal, neuroinflammatory, musculoskeletal, genetic, and psychosocial [4]. Vulvodynia is part of "Genito-pelvic Pain Disorder/ Penetration Disorder" in the sexual dysfunctions of the diagnostic and statistical manual of mental disorders´ (DSM-5) section [5]. It also shows its negative impact on the psychosocial, sexual, and relational domains of the affected woman´s and her partner´s well-being, as much or even more than the experience of the pain itself [6].

Provoked vestibulodynia is the most common display of this kind of medical condition (80%)[7] and the most frequent cause of dyspareunia in premenopausal women [8]. With an average age of onset of 30 years, the estimated lifetime prevalence is 8% [9]. The Hispanic population has been known to have an increased risk of 40 to 80% [10]. A Portuguese investigation highlights a lifetime prevalence of 16% [11]. Feelings of shame and hopelessness coupled with sexual eviction by the experience of pain, barriers to the use of health care by minorities, conservative religious norms, and the fear of stigmatization by society or misunderstanding by health professionals, trigger a late demand for treatment by only 60% of affected women despite personal and health system overload [12-14]. Of these women seeking treatment, only 50% are properly diagnosed, mostly due to the absence of changes in the physical examination and the existence of related comorbidities. This underdiagnosis makes epidemiological data available inaccurate and heterogeneous in literature [6].

Etiopathogenesis –

The etiopathogenesis of vulvodynia is unknown [2]. Although usually conceptualized in a dualistic way, which results from biomedical or psychosexual perspectives, nowadays the most accepted theory is based on the integrated model of these two visions that will be focused on the sequence [13].

Biomedical model –

1. Central and peripheral neurological mechanisms - The heterogeneity of vulvar pain syndromes denotes that different peripheral and central mechanisms may be present: local production and release of pro-inflammatory and nociceptive substances; neuroproliferation of afferent C fibres and central sensitization phenomena. These may result from the interaction of neurological, inflammatory, and hormonal mechanisms, clinically converting into hyperalgesia (excessive sensitivity to a painful stimulus) and/or allodynia (perception of pain when confronted with painless stimulus), establishing chronic neuropathic pain [13]. Studies show that women with provoked vestibulodynia have a density of type C nociceptive afferent nerve terminals in the vestibular mucosa up to 10 times higher than asymptomatic women [15, 16], in addition to the increase of local mast cells producing neuronal growth factor and heparanase, responsible for peripheral neuronal hyperproliferation [17]. In addition to this fact, the perception of pain is ultimately a phenomenon mediated by the cortex [18] and abnormal modulation in vulvodynia may be evidenced by central sensitization (exaggerated perception of pain with painful and non-painful vestibular stimuli), in neuroimaging tests [13]. Pukall et al reported that, when confronted with vestibular nociceptive stimulation, women with vestibulodynia exhibited amplification of neuronal activity in the

somatosensory, insular, and anterior cingulate cortex, areas responsible for the processing and modulation of pain, as seen in other chronic pain syndromes. Pukall's magnetic resonance imaging study also showed that non-painful pressure intensified the activity in the somatosensory, frontal, and insular cortex [19]. Autonomous dysfunction also occurs in women with vulvodynia, mainly secondary, denoted by higher heart rate and lower systolic blood pressure at rest compared to controls, although it is inconclusive whether it is a cause or consequence of the pain [20]. The central sensitization mechanism is also the most accepted etiopathogenic theory to explain the comorbidity between vulvodynia and chronic pain syndromes [21]. A recent Portuguese study positively correlated vulvodynia with dysmenorrhea, fibromyalgia, irritable bowel syndrome (IBS), painful bladder syndrome, headache, pain of the coxofemoral and temporomandibular joint, with a more significant association with entities such as fibromyalgia and IBS [11].

2. Inflammatory mechanisms – Pain represents one of the cardinal signs of inflammation [18]. The neuroinflammatory etiological hypothesis is based on the fact that localized provoked vestibulodynia is often consecutive to recurrent vaginal infections [22]. This model explains that an inflammatory stimulus (e.g. Candida albicans, contact allergy) causes: cell migration response, mostly from innate immunity, amplified in the vulvar vestibule, releasing cytokines and nociceptive substances and originates regional hyperinnervation of C fibres and increased receptor of capsaicin. There is a peripheral decrease in mechanical pain thresholds, followed by lower thresholds to other stimuli including temperature and vibration. Inflammation is prolonged by the host´s limited ability to control it, sometimes associated with reflex hyperactivity of the pelvic floor. Through central sensitization, the perception of vulvar pain reverberates even after the resolution of the acute inflammatory process, attributing chronicity potential [13, 22]. This theory is also corroborated by histological studies that demonstrate an increase in mast cells and pro-inflammatory substances and a decrease in natural killer T cells in vulvodynia [4, 13].
3. Hormonal mechanisms - The hormonal impact on the development of vulvodynia is inconclusive [8]. The structure and function of vulvar tissue depend on the influence of sex steroid hormones, whose reduced levels occur by natural causes (e.g. menopause, lactational amenorrhea, anorexia, hypothalamic amenorrhea, excessive stress/physical activity, and hyperprolactinemia) or iatrogenic drugs (e.g. tamoxifen, leuprorelin, spironolactone and combined hormonal contraceptives (CHC), oophorectomy) [4]. Hormonal theories explain that hypoestrogenism can dictate hyperinnervation in the inflammatory milieu, supported by evidence of higher pain sensitivity in the premenstrual phase with low estrogenic levels and lower pain sensitivity in the periovulatory phase of estrogenic peak [23]. Regarding the association of CHC and vulvodynia, the findings are discrepant. Some studies have not confirmed the association [24, 25], while others have shown a positive correlation [26 - 28]. An explanation in favour suggests that the CHC causes alterations in the vestibular mucosa, making it more atrophic and vulnerable to mechanical tension, decreasing the mechanical threshold of pain [29]. In addition to peripheral neuronal influence and estrogen-mediated trophism, there is also evidence of beneficial androgenic action on psychological well-being, mood, increased desire, arousal, lubrication, and orgasm intensity [30].
4. Mechanisms of pelvic floor hyperactivity - 90% of women with provoked vestibulodynia show hypertonic pelvic floor muscles [31], with interference in voluntary contraction and relaxation [8]. The pathophysiological mechanism associates increased muscle tone with oxygenation deficit of the muscles and overlapping mucosa, especially in the posterior vestibule. Relative hypoxia increases local lactic acid levels, causing allodynia and vulvar burn sensations [31]. On the same basis, the hyperreactivity of the deep muscles and superficial bulbocavernosus/ischiocavernosus muscles can lead to deep dyspareunia and clitorodynia, respectively [4].
5. Genetic and embryologic mechanisms - Genetic polymorphisms can dictate the greatest susceptibility to candidiasis or other infections, amplified inflammatory reactions, and tissue hormonal changes by CHC [4]. However, the current

evidence does not corroborate the heredity of vulvodynia [8]. The comorbidity between interstitial cystitis/painful bladder syndrome may translate embryologic phenomena of endothelium dysfunction derived from the urogenital sinus, which originates in the vestibule and sections of the urethra and vagina [4].

Psychological, sexual and couple relationship model -

Vulvodynia represents a threat to the wellbeing of women and partners in their psychological, relational, and sexual spheres, and may be more substantial than the harmful experience of pain itself [32]. Desire, arousal, orgasmic/sexual frequency are parameters of female sexual function affected, exhibiting equally weak relational communication, negative cognitions about penetration with erotophobia and low self-esteem [33, 34]. A Portuguese study reveals a significant overlap between dyspareunia and sexual dysfunctions inherent to female desire, arousal, and orgasm [35]. The partner of a woman with vulvodynia also reports a higher frequency of sexual dysfunction (e.g., erectile dysfunction) and sexual dissatisfaction[33].

Psychosocial factors may constitute precipitating, worsening, or maintenance agents of sexual pain [32]. Two types of maladaptive cognitions can perpetuate the experience of pain. Women who tend to attribute responsibility for affecting all domains of their life to pain report greater psychological distress and sexual dysfunction [36]. On the other hand, women with greater self-efficacy (level of self-confidence in the competence of effective management of pain itself) participate more easily in sexual activities that can cause pain, reducing sexual avoidance and pain intensity and providing improved sexual satisfaction [37 - 39]. Greater self-efficacy is a predictor of positive results in the treatment of provoked vestibulodynia [40]. Another maladaptive cognition concerns thoughts that occur before, during and after sexual intercourse, such as catastrophizing (tendency to magnification, hopelessness and rumination when confronted with pain experience) and hypervigilance (exaggerated attention and permanent monitoring of physical sensations that signal onset of pain). According to the “Fear-Avoidance model” of chronic pain, an initial experience of pain can be interpreted as threatening (catastrophizing), causing hypervigilance and fear of pain and, following, penetrative/sexual avoidance behaviours, with potential for sexual dysfunction [32, 37, 41]. Avoidance generates temporary pain relief, so it reinforces the cycle [14]. Nevertheless, data indicate that 80% of women continue to practice sexual intercourse on a regular basis, despite the pain experienced, which denotes an interference of sexual motivation of approximation or avoidance in the referred cycle [33]. Studies indicate that, when the woman practices the sexual act motivated by positive relational goals, to feel intimately connected to the romantic partner (approach goals), she reports less pain and she and her partner experience better sexual function and satisfaction. When women practice sexual intercourse to avoid negative relational results, that is, not to cause rejection by the partner, relational conflict or to fulfil their sexual duty (avoidance goals), the experience of pain is intensified with worse sexual function of the woman and partner [33, 42]. Avoidance, hypervigilance and catastrophizing represent predictors of negative results in the treatment of vulvodynia [32, 43].

Features related to mood, such as anxiety and depression, increase the risk of vulvodynia 4 times [44], which can also be originated, in reciprocity, by the experience of pain easily stigmatized by society and even health professionals [33], coupled with feelings of anger, frustration, guilt and shame, incompetence in the sexual role and inappropriate femininity [32]. Anxiety is considered to cause central and peripheral nervous system dysregulation induced by stress, generating hypersensitivity, and the pelvic floor can function as an emotional organ when evidencing reflex contractions in response [12, 34].

Relational factors also partake in the pain cycle, mainly through the partner's responses to the woman's pain experience. They can be classified as: solicitous responses (e.g. "If you feel the pain we will stop") - they display attention and empathy, causing avoidance of sexual act without stimulating adaptive responses to pain; negative responses (e.g. "Can't you deal with pain so we can have sex like normal people?") - they indicate anger and hostility; or facilitative responses (e.g. "Let's try another sexual position that causes you less discomfort") - they show affection and adaptive strategy of the couple [32]. Studies reveal that negative or solicitous responses of the partner reinforce the fear of pain and the avoidance of the sexual act and inhibit the woman´s and partner´s achievement of pleasure, aggravating depressive symptoms; while facilitative responses allow the regulation of emotions and intimacy of couples in the face of sexual pain, obtaining a higher threshold of pain and romantic and sexual satisfaction of women and partners [45 - 49]. Empathic sexual communication with the manifestation of affection (e.g. kiss, hug) outside

the sexual context is a protective agent of intimacy and dyadic sexual satisfaction [50].

Traumatic factors related to the experience of the past - victimization in childhood, through bullying, exposure to interparental violence or physical, sexual or emotional abuse - trigger conditions such as vulvodynia, aggravate their symptomatology [51 – 53] and dictate less sexual adjustment of the couple [54]. It should also be noted that the lack of education about sexuality and reproductive anatomy, guided by conservative cultural and religious norms, builds negative expectations, fears and feelings of guilt regarding sex that culminate in sexual dysfunction [14]. All these psychosexual misfits, not knowing whether they will be causes or consequences of the experience of pain [12], are potential targets of cognitive behavioural strategies described in the subsection therapeutic approaches.

Diagnosis

Vulvodynia presumes a clinical diagnosis of exclusion [1]. Currently, there are no imagings or analytical tests to confirm the diagnosis, and a structured anamnesis and a systematic physical examination are central. A history of vulvar pain with a minimum duration of 3 months, supported by a positive cotton swab test, favours the diagnosis, provided that other causes of vulvar pain (e.g. inflammatory, infectious, and neoplastic) are excluded. Patients with generalized vulvodynia most often report diffuse pain such as burning or constant fungal infection. In localized vulvodynia, dyspareunia presents as their main symptom, describing pain as burning or stabbing, sometimes also reported when inserting a tampon, in the soft touch, or wearing tight underwear [2]. The empathic communication of the clinician, who presents himself as a moderator, allows a relationship of trust, facilitating a fluid and comfortable narrative on the part of the patient [55]. Structuring biopsychosocial pain history, the clinician should question about characteristics of pain (intensity, location, quality, onset, temporal pattern, duration, precipitating, worsening or relief factors); medical history (comorbidities, medication, bladder, intestinal and musculoskeletal function, surgeries or trauma); sexual and relational history (orientation, libido, sexual frequency/satisfaction, past negative sexual experiences/ dysfunctions, intimacy dynamics); cognitive behavioural, emotional or interpersonal factors related to pain (automatic thoughts, anticipatory anxiety, sexual avoidance, relational conflict); and efficacy of previous treatments in vulvodynia [2, 40, 56]. The Vulvar Pain Assessment Questionnaire (VPAQ) allows the diagnosis and monitoring of treatment by accessing the biopsychosocial domain of the pathology, encompassing the subjective characteristics of pain, physical and emotional functioning, coping strategies, and factors related to the partner, with advantages of his inclusion in the clinical interview [40, 55].

Physical examination should focus on the urogenital tract, focusing on the exclusion of specific vulvar skin conditions, by the presence of infection, inflammation, pigmentation changes, and solutions of continuity or masses. With the cotton swab test (Q-tip test) an anatomical mapping of areas of pain hypersensitivity is performed, moving the moistened swab from lateral to medial, sequentially, touching gently, the medial thigh, buttock, mons pubis, labia majora, clitoral hood, interlabial sulcus, labia minora and vestibule [56]. The latter should be palpated in 5 positions: ostia of the Skene glands (2 and 10h), ostia of the Bartholin glands (4 and 8h) and fossa navicularis (6h) [56, 57]. The reproduction of the patient's primary pain, a cardinal sign of vulvodynia, is central to validating it and reinforcing the therapeutic relationship. Patients with vestibulodynia often present allodynia in the vestibule, but not externally. The differentiation between generalized allodynia or restricted to the posterior vestibular part indicates an intrinsic pathology of the vestibular endoderm or dysfunction of the pelvic floor muscles, respectively [56]. Speculum examination of the vagina allows evaluation of discharge, erythema, atrophy, or erosions, followed by vaginal unidigital palpation [58]. Fresh microscopic examinations, pH tests, or vaginal discharge cultures may exclude common infections. Biopsies can be obtained if lesions are suspected of dermatosis or neoplasia [2]. Mostly by transvaginal unidigital palpation, tonicity, strength, resistance, sensitivity/pain points of the pelvic musculature are evaluated. There are 2 muscle groups: superficial (urogenital diaphragm: bulbospongiosus, ischiocavernosus, superficial transverse perineal, anal and urethral sphincters) and deep (elevator muscle of anus: deep transverse perineal, pubococcygeus, iliococcygeus, puborectalis, ischiococcygeus). Dysfunctional muscles in the provoked vestibulodynia exhibit hypertonia at rest with myalgia and poor response to motor control of contraction or relaxation. The pudendal nerve is responsible for the sensitivity of part of the vulva and vestibule, distal portion of the urethra and rectum, anal sphincter, vaginal mucosa, and pelvic floor muscles. The pudendal neuralgia may be precipitating or a consequence of pelvic floor dysfunction [31]. In the last step of the physical examination, bimanual palpation assesses size, contour and sensitivity of the uterus

and the adnexa and the rectovaginal examination evaluates the rectovaginal septum and the pouch of Douglas [2].

Therapeutic approaches

Vulvodynia represents a multifactorial medical condition, whose therapeutic strategy must be individualized and multidisciplinary [59], encompassing vulvar hygiene measures, medical treatments in different dosages and combinations, in addition to pelvic floor physiotherapy, interventions in psychosexual health, and, eventually, surgery [13]. Despite the multiple treatments already applied, the evidence of efficacy is limited and based on clinical experience, with a scarcity of randomized controlled trials (RCT) [8, 13], in addition to the confounding factor of spontaneous improvement of about 40% of patients [60]. Functioning as therapeutic adjuvant in reducing vulvar irritation, the recommended vulvar hygiene measures are as follows: avoid tight clothing or exercises with vulvar pressure and friction (e.g. cycling); wear cotton underwear, washing it with hypoallergenic products, not using it overnight; perform vulvar hygiene only with water, once a day; keep the vulva dry after bathing; avoid local scented products. For the couple, the use of water-based lubricants should be encouraged; exploring sexual positions less related to pain; and urinating, with occasional sitz baths or ice application, after each sexual intercourse [12, 57].

Medical therapy - Pain management medications constitute the basis of medical treatment [13], being more effective in secondary provoked vestibulodynia [33]. Several categories of antinociceptive, anti-inflammatory, neuro-modulatory, muscle relaxants and hormonal agents are discussed in the sequence. Within the group of antinociceptive agents, lidocaine 2-5% is the most prescribed, having already been considered the first-line treatment [59]. It is applied every night or thirty minutes before sexual intercourse [8], to desensitize vestibular nerves [13], occasionally having transient effects of burning or vulvar and penile numbness [61, 62]. Although uncontrolled studies have demonstrated its efficacy [63, 64], one RCT found no differences in pain reduction compared to placebo [65]. Topical cromolyn 4% showed no significant difference in symptom improvement in relation to placebo [66] and capsaicin, acting in neuropathic pain, showed efficacy in uncontrolled studies [67, 68], but side effects of severe irritation limit its use in the treatment of sexual pain [8]. Within oral anti-inflammatory drugs, non-steroids have no efficacy in vulvodynia [13]. Although some case series report the efficacy of interferon [69, 70] and injectable corticosteroids combined with lidocaine [71 - 73], by reducing the release of frequently increased cytokines in the hymenal tissue, they are not recommended as a treatment for vulvodynia [59]. In neuromodulators, the long-standing use of antidepressants and anticonvulsants stands out [59, 74]. Antidepressants demonstrate a success rate of 27-100%, acting on the modulation of peripheral nociception, by releasing inhibitory neurotransmitters [59]. Amitriptyline, the most widely used tricyclic antidepressant, showed favourable results in several uncontrolled studies [75 - 81]. However, the only RCT did not attribute the benefit of desipramine compared to placebo [65]. Regarding anticonvulsants, despite promising results, in the attenuation of depolarization of nociceptors by oral and topical gabapentin [75, 76, 82 - 84], as well as pregabalin [75, 85], carbamazepine [86] and lamotrigine [87], more RCT are needed so that they can be recommended as therapeutic [59]. These are associated with significant adverse events (e.g. drowsiness, dizziness, ataxia) and high discontinuity of treatment [57]. In the group of myorelaxants, vaginal diazepam combined with transcutaneous electrical nerve stimulation demonstrated significant analgesic benefit [88] while botulinum toxin type A significantly improved pain and sexual functioning [89 - 91], with effects maintained 2 years after treatment [89]. However, in the only placebo-controlled trial, botulinum toxin showed similar significant pain reductions at 6 months [92]. Regarding hormonal treatment, two RCT tested the use of topical estrogen with discrepant results [93, 94]. However, cessation of hormonal contraception with the introduction of topical estrogen alone or in combination with testosterone can reduce vestibular pain in vulvodynia under CHC [95].

Pelvic floor physiotherapy is widely used as a treatment for sexual pain [8], with the improvement of vulvodynia in 71-80% of cases [96]. Although there is no universal therapeutic program for pelvic floor rehabilitation [8], several modalities encompassing manual and guided insertion techniques and electromyographic biofeedback/electro-therapeutic methods are used [8, 13, 97]. In particular, manual techniques (vaginal/rectal internal and external palpation) of myofascial release use a slight stretching to relax, decrease the tone and improve local blood circulation, allowing mobility in the pelvi-perineal region, increased size of the vaginal opening, desensitization of the vulvar mucosa and improvement of sexual function [8, 97]. Therapy takes place in sessions from thirty minutes to one hour, weekly or biweekly, with a minimum duration of 12 weeks [31] and several studies prove its efficacy [98 - 100]. Electromyographic biofeedback is a modality in which an electromyograph is inserted into the vagina and the woman re-educates the pelvic floor muscles

by feedback, as she observes the quality of relaxation-contraction of them on a monitor [13]. This therapy has prolonged efficacy in sexual function [64, 101, 102], but should not be used alone [97]. One RCT compared biofeedback with vestibulectomy and cognitive behavioural therapy (CBT). The first of that showed pain reduction efficacy by 35%, maintained at 2.5 years of follow-up, but less than the other two treatments in comparison [103]. Vaginal dilators are marketed in boxes of 4 to 6 units in progressively larger diameters, based on plastic or silicone. They aim, by a technique of gradual exposure, to desensitize tissues and reduce muscle hyperreactivity, minimizing sexual pain, coupled with the annulment of maladaptive thoughts of fear, anxiety and hypervigilance when confronted with vaginal penetration, which culminates in the avoidance of sexual act and intimacy [104]. Although there is no uniform protocol, under the guidance of a trained therapist, the size of the initial dilator to be introduced is identified, which will be what causes some discomfort, but with tolerance at rest inside the vagina for three to five minutes. Then, the insertion and repeated removal of the same dilator is practiced for ten to thirty minutes, progressing to the next size when there is no discomfort with the previous one [97, 104]. Therapy lasts for weeks or months, in association with home training [104]. By a technique of confronting peripheral and central factors that perpetuate pain, it is a component of CBT in vulvodynia [104], with proven benefits in improving tolerance to vaginal penetration [103, 105]. It should also be explained that a program with integration of the various modalities of pelvic floor physiotherapy is superior to each therapy alone and should be considered a first-line treatment in vulvodynia [13], as recommended by the American College of Obstetricians and Gynecologists (ACOG) [57].

Finally, surgical therapy should be considered the last line of treatment for localized provoked vestibulodynia, especially in the secondary type, after the failure of successive conservative treatments [13, 62]. This treatment has the highest described success rate (60-90%) [57], with improvement in sexual function maintained at 12-30 months of follow-up [106]. Since the first surgical reports of Woodruff and Poliakoff in 1981[107], the vestibulectomy technique had several variants: excision of the painful part of the vestibule from the introitus to the Hart line, semicircular excision of the posterior vestibule or complete vestibulectomy with extension to the anterior vestibule [106, 107]. Complications are rare (haemorrhage, infection, vaginal stenosis, Bartholin cyst formation, pudendal nerve injury) [59, 107]. Other alternative therapies such as hypnotherapy [108, 109], acupuncture [110 – 113] and Light Amplification by Stimulated Emission of Radiation (LASER) therapy [114, 115] have shown promising results, but the current evidence is insufficient [59].

Psychosocial, sexual and couple therapy - Psychological treatments for vulvodynia focus on psychoeducational and cognitive behavioural approaches, in an individual, group or couple format [59], targeting multiple biopsychosocial dimensions of vulvodynia - sexual, relational and psychological, in addition to the management of pain experienced [13, 116]. By accessing behaviours, emotions, cognitions or couple interactions that accompany the experience of pain, including sexual intercourse, it is proposed to reduce the intensity of pain, while restoring the romantic balance and sexual satisfaction of the couple [13, 116]. It is the only modality that directly includes the partner, granting him co-responsibility for the treatment. It consists of 3 stages [116].

The first stage involves psychoeducation, the experience of pain is validated, and the multidimensional concept of pain and how cognitions and maladaptive behaviours promote the maintenance of pain and intervene in sexual dysfunction are explained [12]. The couple should, at home, explore the female genitalia, looking for painful points and paying attention to pain reactions [116]. The diary of sexual pain can be an instrument of reflection during sessions, and the woman must register the intensity of pain, the consequences and the coping strategies adopted. Two to three realistic short-term objectives are established to motivate the couple and guide the intervention. They do not include the complete elimination of pain and ideally, promote emotional intimacy, increasing the repertoire of non-coital activities shared by the couple [116]. Sex will not be a primary goal, but the consequence of successful treatment [12]. The second stage represents the active phase of psychosocial treatment. Based on the daily reports, the woman reflects on the factors that aggravate or minimize pain and investigates how to obtain its control [116]. It allows the development of adaptive coping strategies for pain, adopting behaviours of reappraisal, emotional regulation and self-efficacy, and overlapping cognitive distortions - sexual avoidance, pain catastrophizing, anxiety and anticipatory hypervigilance [59]. At this stage of therapy, higher levels of anxiety may arise because, in the avoidance cycle, one wishes to expose and resume what is being avoided: sex [12]. Exercises such as diaphragmatic breathing, when introduced early, accompanied by couple meditation, allow the

reduction of anxiety that inhibits libido but contributes to hyperreactivity of the pelvic floor [36]. It is also encouraged to communicate more expressively with the partner, increasing the emotional reconnection of pleasure shared by both elements, without sexual focus, contradicting the feelings of shame, uselessness and guilt associated with the reduction of desire and frequency of intercourse [116]. Fantasies, with the intention of positive cognitions causing desire, arousal, lubrication, and, thus, reduction of sexual pain should be encouraged [12]. At this stage, attention should be paid to how the partner reacts to the partner's experience of pain, validating facilitative responses and abolishing solicitous or negative responses [116]. In order to disconnect intimacy from the anticipation of sexual pain that leads to sexual avoidance in the sequence, the sex therapy technique of sensory focus by Masters and Johnson can be used [12]. Consisting of several steps, it moves from the non-genital touch to the genital touch and, finally, allows vaginal penetration. In the first stages, intercourse and orgasm are prohibited, eliminating anticipatory anxiety about sex. It diverts the focus to other pleasurable sensations in the couple's intimacy, thus increasing sensuality, and desire while granting the woman her own pain control command [12]. The last stage of psychotherapy consolidates the skills learned that serve the couple´s balanced relationship, transmitting to the couple the responsibility to apply effort to maintain positive results [116]. However, some aspects may become a priority in the face of the described therapy, as they may contradict or make it worthless. Examples are severe psychiatric disorders, child victimization or abuse, or relational contexts with psychological, physical or sexual aggression by the partner [13, 116]. This last point contraindicates sexual therapy/couple therapy because there is no prerequisite of trust and stability in the home and it may even exacerbate the conflict with an escalation of interpersonal violence [116].

CBT as a minimally invasive strategy obtains excellent long-term results in RCT [34, 103, 105, 117 - 120]. A study that revealed pain levels similar to vestibulectomy after 2.5 years of follow –up stands out [103]. According to the recommendations of the Forth International Consultation on Sexual Medicine, CBT should be associated with pelvic floor physiotherapy as first-line therapy [13]. Promising studies point to a greater effectiveness of the integration of different medical, physical and psychological modalities, as an alternative to sequential treatment [121 - 124], especially the study by Brotto et al, reporting a significant reduction in dyspareunia and improved female sexual satisfaction and emotional well-being, maintained at 3 months of follow-up [123].

Conclusion

Vulvodynia reveals itself as a complex pathological condition, with a negative impact on the different spheres of the life of the woman who experiences pain and her partner who participates in the sexual and relational field, where the pain manifests itself in a significant way. Its etiopathogenesis is uncertain, but biological and psychosocial factors are assumed to play a role in its origin and perpetuation. The treatment, despite the immense range of drugs and other modalities studied, has been of limited effectiveness and frustrating for women and health professionals. In the future, more randomized controlled trials will be essential to prove therapeutic efficacy and safety, especially of the most innovative typologies. The supposed multifactorial underpinnings of vulvodynia are potential therapeutic targets of the integrated multidisciplinary approach, from conservative to more invasive treatment. The cornerstone of effective management of vulvodynia is based on the union of efforts between teams of health professionals from different areas - General Medicine, Gynaecology, Mental Health, Pain and Sexual Medicine, with the common objective of improving the well-being of women in the experience of vulvar pain and its sexual and relational contexts.

Conflict of interest: None. **Disclaimer:** Nil.

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Susana Patrícia Lima Oliveira [1], Daniela Filipa Lima Oliveira [2], Marta Andrea Ferreira Fernandes [3], Cláudia Margarida Nascimento Marques [4], SuzanaCristina Perdigão dos Santos Lucas [5]

[1] Medical Doctor, Department of Obstetrics and Gynaecology, Centro Hospitalar Tondela-Viseu, Viseu, Portugal; [2]Medical Doctor,Unidade de Saúde Familiar Montemuro, ACeS Dão Lafões, Viseu, Portugal; [3]Medical Doctor, Department of Obstetrics and Gynaecology, Centro Hospitalar Tondela-Viseu, Viseu, Portugal; [4]Medical Doctor,Department of Obstetrics and Gynaecology, Centro Hospitalar Tondela-Viseu, Viseu, Portugal; [5]Doctor of Psychology, Staff Consultations on Sexology, Centro Hospitalar Tondela-Viseu, Viseu, Portugal.