Evaluation and Treatment of Postmenopausal Dyspareunia

Case Study and Commentary, Colleen K. Stockdale, MD, MS, and Lori A. Boardman, MD, ScM

ABSTRACT

• **Objective:** To provide an overview of the diagnosis and treatment of women with postmenopausal dyspareunia.

• **Methods:** A literature review was conducted to identify current strategies for the diagnosis and treatment of postmenopausal dyspareunia.

• **Results:** Postmenopausal dyspareunia is underreported and underdiagnosed. Although it may be difficult for providers and patients to address, dyspareunia significantly impacts affected women and their partners. While there are many causes of postmenopausal dyspareunia, the initial evaluation should be directed toward consideration of vaginal atrophy due to lack of estrogen on urogenital tissue, especially among women reporting concomitant vaginal dryness. Beyond the use of local estrogen therapy for atrophic vaginitis, treatment is limited and often based on anecdotal evidence.

• **Conclusion:** Painful intercourse can arise in a number of settings, and it is important to evaluate postmenopausal women with dyspareunia rather than empirically treat for a presumptive diagnosis of vaginal atrophy. Treatment must be individualized and may require more than 1 modality.

Despite evidence suggesting that vulvar pain is underreported, approximately 15% of all gynecological visits are for vulvar pain symptoms including dyspareunia [1]. Sexual dysfunction due to dyspareunia is common among postmenopausal women. There are a number of disorders that may result in dyspareunia, including both organic etiologies and those with no identifiable cause (vulvodynia). While there are proposed theories regarding the etiology of vulvodynia, including repeated yeast infections, inflammatory responses, nerve injury, altered cellular response to infection/truma, abnormal hormone receptor expression, and genetic susceptibility, the term “vulvodynia” remains a diagnosis of exclusion and most likely represents a multifactorial disease process rather than a single cause, with neuropathically mediated pain manifested predominantly as burning as a unifying end result [2].

Despite the significant prevalence and impact on affected women and their partners with regard to intimacy and relationships, women, especially postmenopausal women, will minimize their dyspareunia, believing it is part of the “normal” aging process. Furthermore, the degree of concern regarding dyspareunia and vulvar pain symptoms may be related to changes in partner status (widow or newly dating) or other medical problems. Thus, women may tend to disregard dyspareunia if they do not have a partner (widow) or if their partner has erectile dysfunction precluding vaginal intercourse. Dyspareunia may then become a concern if there is a change in partner status or if their partner seeks treatment for a medical problem.

While vaginal atrophy is the most common cause of postmenopausal dyspareunia, painful intercourse can arise in a number of settings, including infections (eg, candidiasis), inflammation (eg, lichen planus), neoplasia (eg, squamous cell carcinoma) and neurologic disorders (eg, herpes neuralgia). Thus, it is important to evaluate postmenopausal women with dyspareunia rather than to empirically treat for a presumptive diagnosis of vaginal atrophy.

The primary care provider is ideally situated to initiate care for dyspareunia, as there often is an established relationship with the patient. Providers should be aware that more than 1 etiology may be identified; thus, treatment must be individualized and may require more than 1 modality for an optimal out-

From the University of Iowa, Iowa City, IA (Dr. Stockdale) and the University of Central Florida College of Medicine, Orlando, FL (Dr. Boardman).
Case-baseD review. The goal of this article is to provide a working knowledge of common etiologies, diagnostic considerations, and management strategies for postmenopausal dyspareunia.

CASE STUDY
Initial Presentation and History

Mrs. S. is a 62-year-old postmenopausal women presenting with increasing vaginal dryness and dyspareunia over the previous 18 months. She is avoiding vaginal intercourse with her husband of 40 years because of severe pain with vaginal penetration. She has tried over-the-counter lubricants with minimal improvement.

Mrs. S. is otherwise healthy and reports no new health concerns. She denies urinary or defecatory symptoms. She has had no pregnancies. She has been menopausal since age 52 years at which time she was started on systemic hormone replacement therapy for vasomotor symptoms. Given concerns about hormone (estrogen) therapy and possible breast cancer risk, she discontinued hormone replacement therapy 2 years ago.

Her past medical history is significant for cholecystectomy (age 44 years). She drinks 1 glass of wine daily and denies use of tobacco or illicit drugs.

Her husband has no health concerns. Specifically, Mrs. S denies history of erectile dysfunction or pain with intercourse reported by her husband.

• What is the definition of postmenopausal dyspareunia?

Dyspareunia is defined as recurrent or persistent pain associated with attempted or complete vaginal entry or penile-vaginal intercourse [3]. While there has been no modification of this definition regarding menopausal status, the situation in which dyspareunia occurs and associated vulvar-vaginal symptoms may assist in determining the underlying etiology.

Further classification of dyspareunia is often based on anatomic location (superficial vs deep pain conditions) as outlined in Table 1. Superficial dyspareunia (entry dyspareunia) is defined as pain with initial penetration of the vaginal introitus, while deep dyspareunia is defined as pain with deep vaginal penetration [4]. The focus of this article is on the evaluation and treatment of superficial dyspareunia among postmenopausal women.

• What is the prevalence of postmenopausal dyspareunia?

The prevalence of dyspareunia varies widely, from 1% in Sweden to nearly 46% in the United States and differs by culture, population setting, and provider initiative to address the issue [2]. Furthermore, prevalence estimates vary depending on the time frame specified by researchers and whether distress is included in the query. Dyspareunia was noted to range from 8% to 22% in a limited review including 18 well-designed studies [2]. While the reported prevalence rates may vary depending on the study methods employed, it is clear that sexual problems and level of distress have important implications in the care of women and underscore the importance of inquiry regarding sexual discomfort.

Regarding postmenopausal women, dyspareunia is believed to be underreported and underdiagnosed, with less than 1 in 5 women seeking medical attention, despite evidence to suggest 50% of postmenopausal women experience vaginal symptoms [5].

• What is the etiology of postmenopausal dyspareunia?

The lack of standard criteria and overlapping descriptors for sexual pain dysfunction restricts our understanding of the conditions that contribute to dyspareunia. Additionally, the relationship between depression, anxiety, and sexual dysfunction and chronic vulvar pain syndromes remains unclear [6].

Among organic causes for postmenopausal dyspareunia, the most common etiology is related to atrophic changes caused by absence of estrogen on urogenital tissues (vagina, vestibule, and vulva). Vaginal dryness is reported by approximately 66% of menopausal women, and dyspareunia is reported by 50% of women still having intercourse [7]. Amid postmenopausal women presenting with symptoms of vaginal dryness, vulvar burning, and dyspareunia, atrophic changes related to diminished estrogen should be the first diagnostic consideration.

Unlike vasomotor symptoms, atrophic changes manifest over time and are unlikely to resolve without treatment [5]. The vaginal mucosa responds to steroid hormone cycling and appears pink and moist, and forms
Dyspareunia folds in well estrogenized women. Additionally, the presence of estrogen supports colonization of lactobacilli by stimulating glycogen production in vaginal epithelial cells. As estrogen levels decrease, the epithelium becomes pale, thin, smooth, and dry. The mucosa becomes increasingly fragile, a result of the reduction in the thickness of the superficial and intermediate cell layers of the vaginal epithelium and loss of vascularity in the vaginal mucosa. With decreased estrogen production, vaginal secretions are reduced and the genital epithelium becomes increasingly susceptible to trauma, chemical irritants, and bacterial overgrowth. With severe atrophic vaginitis, a purulent, noninfectious discharge along with fissuring of the vestibule may be noted.

As noted previously, the prevalence of sexual symptoms including dyspareunia differs across studies. However, the most common sexual complaints are reduced desire, vaginal dryness, dyspareunia, poor arousal and orgasm, and diminished sexual satisfaction [8]. Age and declining estrogen levels are associated with reduced sexual functioning, desire, and responsiveness throughout the menopause transition [8].

Other etiologies to consider in the evaluation of superficial postmenopausal dyspareunia overlap considerably and include the following.

Vaginitis

Vaginitis may present with the primary symptom of vulvar pain or dyspareunia. While the most common cause of vaginitis is an infection (e.g., candidiasis, trichomoni- niasis), noninfectious inflammatory vaginal disease may similarly manifest with concomitant infective vaginitis (due to secondary infection).

Desquamative inflammatory vaginitis (DIV) is a noninfectious vaginitis noted for profuse yellow discharge, with marked inflammation and abundant immature squamous cells on wet mount. DIV has been associated with a number of conditions, including erosive lichen planus. Treatment is based on cohort studies and anecdotal reports. The use of a high-potency intravaginal steroid alone or in combination with clindamycin has been reported. In postmenopausal women with DIV, supplementary estrogen therapy may be considered [9].

**Inflammatory Disorders**

Inflammatory disorders (including dermatitis and lichen simplex chronicus) represent a common condition of varied etiology, with a prevalence of up to 54% among women presenting with chronic vulvar symptoms [10]. Patients most often complain of itching, although with mucosal involvement pain and dyspareunia may be reported.

Contact dermatitis has been identified in up to 26% of women diagnosed with vulvar dermatitis, often as a result of exposure to such irritants as detergents, soaps, perfumes, semen, and propylene glycol, an additive found in many topical medications. Treatment consists of removal of the offending agent or practice, correction of barrier function, elimination of scratching, and reduction of inflammation. Common vulvar contact irritants and allergens include [11]:

- Adult or baby wipes, colored or scented toilet paper
- Laundry detergents, fabric softeners, and dryer sheets
- Soaps, bubble baths, salts
- Sanitary products, including tampons and pads
- Vaginal and partner hygiene products, including perfumes, body sprays, and deodorants
- Topical medications and remedies (anesthetics, antibacterials, antimycotics, corticosteroids, tea tree oil), emollients
- Condoms

Lichen simplex chronicus (LSC), previously termed squamous cell hyperplasia, is a chronic skin condition that results from persistent vulvar irritation and epithelial disruption. The skin thickens and can also appear pale,
hyperpigmented, fissured, and edematous. LSC is the end stage process of chronic irritation and scratching. As with contact dermatitis, treatment of lichen simplex consists of identification and removal of the initiating factor, repair of the skin’s barrier layer function, and reduction of inflammation, as well as disruption of the itch-scratch cycle. Mid- to high-potency topical corticosteroids (depending on the presence of underlying disease) should be tailored until the condition resolves. Medications with antihistamine and sedative properties can be added to control nocturnal itching. A SSRI can be prescribed for daytime use, and oral or intralesional steroids can be used for refractory cases [12].

Autoimmune Disorders

Vulvar dermatoses including lichen sclerosus, psoriasis, and lichen planus are believed to have an autoimmune etiology and demonstrate the classic picture of other autoimmune disorders: symptom chronicity with exacerbations and remissions, lack of a clearly defined pathogen, and response to steroids or other immunosuppressants. These dermatoses may result in vulvodynia including dyspareunia, and are commonly identified when women present to vulvar specialty clinics for evaluation and treatment [13–15].

Lichen sclerosus is a chronic skin disorder that typically affects genital skin with extragenital lesions present in 13% of those affected [11]. The mean age of onset is in the fifth to sixth decade, with patients presenting with pruritus, irritation, burning, dyspareunia, and tearing. The typical lesions of lichen sclerosus consist of white papules and plaques. The skin may appear thinned, whitened, and crinkled, often with areas of ecchymosis or purpura. Topical steroid therapy is considered the standard of care in the treatment of lichen sclerosus (eg, topical clobetasol dipropionate used twice daily for 1 month, then daily for 2 to 4 weeks, followed by topical betamethasone for maintenance therapy) [13].

Psoriasis is a common skin condition that can manifest with genital involvement. Unlike the typical clinical presentation including “salmon pink” plaques with silvery scales elsewhere, scales are typically absent with vulvar psoriasis. The plaques are well demarcated and easily misdiagnosed as Candida. When limited to the vulva, local treatment with mid- to high-strength topical corticosteroids is the treatment of choice [12].

Lichen planus is an inflammatory disorder that exhibits a wide range of morphologies. The most common form is erosive lichen planus which classically presents on mucous membranes as painful, erythematous erosions with white, lacy, reticulate striae (Wickham striae). In addition to atrophic changes associated with estrogen withdrawal, the vaginal epithelium in women with erosive lichen planus is often involved with scarring and possible obliteration of the vaginal space resulting from agglutination of eroded surfaces. While symptomatic improvement is possible, patients should be advised that vulvovaginal lichen planus is most often a frustrating, chronic and remitting disease that requires long-term maintenance [16]. The most frequently recommended treatment for vulvovaginal lichen planus is the use of local topical steroids, although the use of the immune system modulator tacrolimus may be considered as an alternative for some patients [17].

Other Disorders

Bartholin’s cysts occur as a result of distal obstruction of the Bartholin gland. The most likely diagnosis in a woman with a unilateral, tender, swollen labial mass is an abscess of the Bartholin’s gland. Diagnosis is based on clinical presentation, with the cyst transected by the labia minor [18].

Bartholin’s gland carcinoma, while rare, should be considered in the postmenopausal woman presenting with a Bartholin gland enlargement (including Bartholin cysts or abscesses). Excision or marsupialization with biopsy should be considered to evaluate for an underlying carcinoma.

Pelvic floor disorder. The pelvic floor changes seen in women with vulvar pain appear to be a reactive response to pain. Women with dyspareunia often have multiple painful experiences before seeking help. This results in a vaginismus reaction (involuntary perineal and pelvic muscle contraction to prevent pain/penetration) whereby the pelvic floor “learns” a conditioned, protective guarding response that results from repeated attempts at painful vaginal penetration [7,19]. While the mainstay in treatment includes pelvic floor physical therapy and biofeedback, trigger point injections have also been reported with variable success.

Vulvodynia is a diagnosis of exclusion and may be associated with any of the conditions contributing to the symptom of dyspareunia. The vast majority of women who note superficial dyspareunia localize their pain to the vestibule (vestibulodynia) [20]. The spe-
cific evaluation for a primary diagnosis of vulvodynia has been outlined by Haefner et al [21]. Management is often based on “trial and error,” and is typically frustrating for practitioners, patients, and significant others.

**Systemic disorders.** Medications may contribute to vaginal atrophy and dyspareunia. For example, postmenopausal women who receive chemotherapy, radiation, or aromatase inhibitors following breast or gynecological malignancy may notice worsening of menopausal symptoms, including vaginal atrophy and dyspareunia. Systemic conditions may also affect the sensitive vulvar-vaginal tissues and contribute to dyspareunia, eg, Sjögren’s syndrome. Among 22 women evaluated for dyspareunia, 4 were found to have Sjögren’s syndrome and 6 were found to have sicca [20].

**Psychologic factors.** While many studies report an increase in anxiety and depression symptoms in women with dyspareunia, the role of psychological factors remains unclear [2]. Whether a psychological component is cause or effect of the pain process, many women with dyspareunia will benefit from a multidimensional treatment approach.

### What are the symptoms and signs of postmenopausal dyspareunia?

The symptoms and signs of postmenopausal dyspareunia depend upon the underlying etiology. Thus, a careful history and physical exam are necessary to determine the most likely etiology(s) for women presenting with dyspareunia, regardless of menopausal status. Listening and clarifying your patient’s history is the first step in the evaluation of vulvar pain. Women with postmenopausal dyspareunia related to hypoestrogenism (atrophic vaginitis) will describe vaginal dryness, burning, and pain with vaginal penetration. Otherwise, clinical characteristics of women suffering from dyspareunia unrelated to atrophic vaginitis are similar in that the important factor is simply the presence of “dyspareunia.” Thus, one must consider additional clues in determining the underlying cause (age, menopausal status, associated symptoms, systemic disease processes) as well as exam findings.

### What is the approach to the evaluation?

Given limitations to the clinical situation in which dyspareunia is identified, a subsequent appointment (or appointments) may be necessary to conduct an appropriate evaluation. The initial step includes a careful history regarding the onset, severity, duration, and impact of the dyspareunia as well as the patient’s desire and motivation for treatment. Next, a comprehensive review of the medical history including all current and recently changed (new or discontinued) medications and review of systems is paramount. Finally, a targeted physical examination is performed, including areas identified on review of systems. A vaginal wet mount including maturation index and pH should be obtained to assess for possible contributing factors including atrophy.

A specific concern identified by patients and providers alike is how and when to inquire about sexual pain. It requires considerable courage for patients to bring up their sexual concerns. The need to ask every woman open-ended questions about pain with intercourse can not be overemphasized. It is important for the clinician to provide a safe nonjudgmental environment while taking a sexual history. It is important to identify whether the pain is intermittent or consistent, as well as location and associated factors including onset, specific activities, clothing, position, and whether pain is related to a particular situation.

### Further History and Physical Examination

As noted, Mrs. S. has been menopausal since age 52 years, at which time she was started on systemic hormone replacement therapy for vasomotor symptoms. She discontinued hormone replacement therapy 2 years prior to presentation. Mrs. S. reports vaginal dryness, vulvar burning, and increasing dyspareunia over the previous 18 months. The dyspareunia occurs with vaginal penetration. At this point she and her husband are no longer attempting intercourse given his concern about “causing her pain.” Mrs. S. is feeling emotionally withdrawn from her husband and would like to regain sexual intimacy as it was previously satisfying. Review of systems is significant for an intentional 10-lb weight loss over the last year with attention to diet and exercise.

General examination is unremarkable: mucus membranes are moist, normal female hair distribution, no
thyromegaly; she is in no apparent distress. Pelvic examination reveals thinned and pale tissue of the vulva. The labia minora are reduced in size. The vagina is thinned with superficial erosions, narrowing and shortening noted. Her pain is reproduced with speculum insertion.

**What is the significance of these findings?**

Hormone depletion in postmenopausal women is associated with urogenital atrophy (with vulvar burning, vaginal dryness, and dyspareunia). Vaginal atrophy and decreased blood flow secondary to estrogen deficiency result in vaginal dryness and dyspareunia. In the presence of estrogen, the nonkeratinized, stratified squamous cells of the vagina are plump and glycogen rich. Lack of estrogen stimulation results in diminished maturation and progressive loss of vascularity in the vaginal mucosa, with thinning of the vaginal epithelium, inflammation, and dryness. Additionally, the vagina loses elasticity and distensibility as collagen is replaced by hyalinization [5]. This may be further exacerbated by diminished skin barrier function, contact irritants, and secondary vaginismus.

While there are no defined standard diagnostic criteria to confirm the etiology of dyspareunia, a reasonable initial approach to the evaluation of sexual pain has been outlined by Haefner et al and is particularly useful in approaching the patient presenting with chronic vulvar pain [21]. As previously noted, the pain should be characterized to the best of the patient’s ability. The provider then establishes both the duration and nature (generalized/localized, unprovoked/provoked, with or without spontaneous pain) of the patient’s discomfort. During the physical examination, other causes of vulvar discomfort (e.g., ulcers or lesions) are noted and biopsied and/or cultured (e.g., for herpes) as indicated. A vaginal examination is then performed to identify common causes of vulvovaginal irritation, including atrophic changes, yeast and bacterial vaginosis [21].

**What diagnosis is suspected? What additional tests might be helpful?**

Given Mrs. S’s age and symptom exacerbation following cessation of systemic estrogen replacement therapy, the most likely diagnosis is dyspareunia related to atrophic urogenital changes (atrophic vaginitis). The diagnosis of atrophic vaginitis is clinical, with confirmation made using simple wet-mount microscopy and pH of the vaginal discharge. With vaginal atrophy, the vaginal pH is elevated (> 5.0), and microscopy reveals presence of basal and parabasal epithelial cells.

**What is the approach to management of dyspareunia due to atrophic vaginitis?**

Management options include lifestyle modification strategies, the use of vaginal moisturizers, and low-dose topical estradiol preparations. The market is overflowing with moisturizers and topical medicaments targeted to reduce vulvar-vaginal symptoms. Indeed, nonhormonal vaginal moisturizers have demonstrated a beneficial effect similar to that of local hormone replacement in prospective randomized studies [22,23]. However, the use of topical medicaments may result in contact dermatitis and should therefore be used with caution. Our initial approach is to eliminate all potential irritants and to optimize skin barrier protection with use of a bland emollient.

The use of estrogen treatment for vaginal atrophy has been well documented and can be accomplished through a variety of locally applied estrogenic preparations (in the forms of creams, tablets and the estradiol-releasing vaginal ring) (Table 2). Premarin is the only estrogen therapy that is FDA approved specifically for the treatment of dyspareunia [24]. It is important to note that even with the use of systemic hormone replacement therapy up to 25% of users will continue to experience symptoms of urogenital atrophy despite improvement in other symptoms associated with estrogen deficiency [25,26]. Dosing of vaginal estrogen depends on the vehicle and product formulation. Thus, familiarity with several products is recommended and should be reviewed prior to administration. While further research is needed to establish the optimal treatment formulation, each of the available vaginal formulations is effective for treating symptoms of vulvovaginal atrophy including dyspareunia [24]. Thus, treatment using the lowest effective dose should be tailored to each woman to best meet her individual needs and concerns.

In a systematic review of local estrogen for the treatment of vaginal atrophy in postmenopausal women, improved efficacy was reported with the use of all local estrogen formulations (including cream, ring and tablets) compared
with placebo and nonhormonal gels [27]. However, some differences did emerge between forms of local therapies: estrogen cream (conjugated equine estrogen) was found to be associated with adverse effects (bleeding, breast pain and perineal pain) [28] or bleeding as measured by the progesterone challenge test [22,29] compared with either 17β-estradiol tablets or the 17β-estradiol ring in randomized controlled trials. Side effects associated with all forms of topical estrogen therapy include the possibility of endometrial hyperplasia, endometrial overstimulation, and breast pain. Whether or not women on long-term therapy with local topical estrogen require prophylactic therapy with progesterone is unknown [27]. A recent treatment trial found no increased risk of endometrial hyperplasia or carcinoma following treatment with ultra-low-dose 10-mcg 17β-estradiol vaginal tablets among 443 women treated for 52 weeks [30]. The North American Menopause Society (NAMS) states local vaginal estrogen therapy administration does not result in clinically significant absorption, and a progestogen is generally not indicated [31].

New treatments that reduce estrogen exposure are under investigation, including selective estrogen receptor modulators, tissue-selective estrogen complexes, and hormone precursors such as dehydroepiandrosterone.

**Initiation of Treatment**

Mrs. S. is interested in initiating local estrogen therapy to reduce her symptoms of dyspareunia and vaginal dryness. After discussing the formulations available, Mrs. S. elects local estrogen cream 0.5 g intravaginally twice weekly at bedtime. In addition she eliminates potential contact irritants.

At her 8-week follow-up, Mrs. S. notes resolution of vaginal dryness and marked improvement of dyspareunia. Genital examination reveals diminished atrophic effect, with moist, pink vulvar vaginal mucosa. Microscopically, there is normalization of the squamous maturation. After review of her progress, Mrs. S. elects to continue the current treatment plan.

**• What other treatments may be considered, especially in women who are concerned about use of hormonal therapy?**

The urogenital tissue becomes less resilient during menopause with resultant sensitivity to chemicals and enzymes in vaginal and personal products (eg, wipes, washes, deodorants, pads). Thus, avoidance of unnecessary products should be recommended. Comfort measures, including sitz baths and nonhormonal vaginal moisturizers and lubricants, are helpful in optimizing hydration of the vaginal mucosa and reducing dyspareunia. Many commercial products contain preservatives that may promote irritation and tissue damage. Thus, if irritation worsens or develops following product initiation, the product should be discontinued.

Although many local therapies have shown promise in the reduction of vulvar pain symptoms in small case series and reports, evidence to support the use of topical therapy beyond estrogen for the treatment of postmenopausal dyspareunia is lacking. Topical anesthetics, including lidocaine (2% jelly or 5% ointment), are the most commonly prescribed topical medications for the treatment of vulvar pain [21,32]. Other topical anesthetics commonly employed include EMLA (eutectic mixture of local anesthesia) and ELA-Max. Benzocaine, a potent sensitizer found in several over-the-counter agents, should not be used to treat dyspareunia. In addition to potential sensitization from the use of topical anesthetics (contact allergen), the use of topical anesthetics will affect the partner as well as the patient. The anesthetic may result in diminished sensation. Caution is advised with oral-genital sexual practices as oral numbing may reduce one's ability to handle oral secretions (diminished swallow reflex).

Compounded topical medications including tricyclics and antiepileptics have been described, largely to avoid the dose-limited systemic effects these medications can cause. These agents are not commercially available for topical use and must be compounded by a qualified pharmacist. The vulvodynia guideline by Haefner et al notes the use of topical amitriptyline 2% (Elavil) and baclofen 2% (Lioresol) in water-washable base for localized vestibulodynia and vaginismus [21]. However, such use is based on anecdotal evidence. Gabapentin has also been compounded as a topical therapy (usually ranging in dose from 2% to 6%) and utilized with promising results [33].

Use of systemic therapies is similarly based primarily on anecdotal evidence. The most studied and commonly used medications include amitriptyline and gabapentin largely on the basis of evidence from studies of other neuropathic pain syndromes [21].

Injectable therapies have been limited by patient acceptance and inconsistent results. Medications employed have included intralesional interferon, corticosteroids, anesthetics, and more recently botulinum toxin. Botulinum toxin
has been used successfully to treat movement disorders, spasticity, glandular hyperactivity, and cosmetic lines. More recently botulinum toxin has been used to treat painful conditions including headache and myofascial pain, and has also been evaluated for the treatment of localized vestibulodynia and pelvic floor spasm in women [34].

Sexual activity results in increased blood flow to the vagina, improved lubrication, and increased vaginal elasticity separate from local estrogen effects on vaginal tissues. Thus, women who report regular vaginal intercourse (or masturbation) have less vaginal atrophy than women who are not sexually active [35].

- **What is the role of physical therapy and behavioral and psychological strategies?**

As noted previously, repeated attempts of vaginal penetration despite dyspareunia may contribute to pelvic floor dysfunction including a vaginismus reaction (involuntary perineal and pelvic muscle contraction to prevent pain/penetration). Thus, it is important to assess for pelvic floor dysfunction and to recommend specific treatment if it is identified. Biofeedback and physical therapy are used in the treatment of vulvar pain and have been demonstrated to improve pain, sexual functioning, and quality of life [21]. Specific therapy techniques, the time required, and the frequency of visits will vary with each person.

Finally, sexual pain will involve physical, psychological, and relationship aspects. Sexual counseling, psychological pain management, and emotional support are essential to provide comprehensive treatment. The history should include questions about relationship concerns, previous history of mental health problems, and abuse. Patients need to know that counseling (sex therapy, couples counseling, psychotherapy) is often employed in a multidisciplinary fashion to optimize treatment [21].

**SUMMARY**

The evaluation of patients with dyspareunia begins with a thorough history and physical examination.

---

**Table 2. FDA-Approved Local Estrogen Formulations**

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Generic</th>
<th>Brand</th>
<th>Content</th>
<th>Dosing</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cream</td>
<td>Estropipate</td>
<td>Ogen</td>
<td>Estrone</td>
<td>Lowest dose for maintenance</td>
<td>FDA-approved for vaginal atrophy</td>
</tr>
<tr>
<td>Estradiol</td>
<td>Estrace,</td>
<td>Estradiol</td>
<td></td>
<td>1 g one to three times a week for maintenance</td>
<td>FDA-approved for vulvar and vaginal atrophy</td>
</tr>
<tr>
<td></td>
<td>Estrasorb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conjugated estrogens</td>
<td>Premarin</td>
<td>Conjugated estrogens</td>
<td>0.5 g</td>
<td>21 days on/7 days off OR twice weekly</td>
<td>FDA-approved for treatment of moderate to severe dyspareunia (as well as atrophic vaginitis)</td>
</tr>
<tr>
<td>Synthetic conjugated estrogens-A</td>
<td>DuraMed</td>
<td>Synthetic conjugated estrogens</td>
<td>1 g daily for 1 week then twice weekly</td>
<td>FDA-approved for treatment of moderate to severe vaginal dryness and pain with intercourse</td>
<td></td>
</tr>
<tr>
<td>Ring</td>
<td>Estradiol</td>
<td>Estring</td>
<td>2 mg estradiol</td>
<td>Change every 3 months</td>
<td>FDA-approved for vaginal atrophy. After an initial 3–4 day peak of blood estrogen levels, the ring maintains a continuous plasma estradiol concentration of 20–30 pmol/L for 3 months, a level that is slightly higher than the level in women not using the ring</td>
</tr>
<tr>
<td>Tablet</td>
<td>Estradiol hemihydrate</td>
<td>Vagifem</td>
<td>10 mcg estradiol</td>
<td>Insert twice weekly</td>
<td>FDA-approved for vaginal atrophy. Lowest vaginal estrogen dose currently available in the US</td>
</tr>
</tbody>
</table>

**NOTE:** Premarin is the only estrogen therapy that is FDA-approved specifically for the treatment of dyspareunia [24]. While further research is needed to establish the optimal treatment formulation, each of the vaginal formulations is effective for treating vulvovaginal atrophy [24].
Patients presenting with pain should be evaluated to rule out underlying organic causes, including atrophic changes, inflammatory conditions, neoplasia, infections, or neurologic disorders. The management of sexual pain including dyspareunia beyond the use of estrogen therapy for atrophic changes related to menopause is a complex process based largely on anecdotal evidence. Despite limited evidence, practitioners can build a repertoire of management suggestions for patients with sexual pain that may be of benefit. Providers should be aware that often more than 1 modality will be required, and treatment must be individualized. Patient education including avoidance of many common irritants and triggers will help reduce the risk of exacerbation of other underlying vulvar dermatoses. Consultation with or referral to specialists in vulvovaginal disorders or dermatology is often needed for appropriate diagnosis and management of patients with more complicated disorders.

Corresponding author: Colleen K. Stockdale, MD, MS, Univ. of Iowa, 200 Hawkins Dr, Iowa City, IA 52242, colleen-stockdale@uiowa.edu.

Financial disclosures: None.

REFERENCES


