

Atopic and Contact Dermatitis of the Vulva



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KEYWORDS

- Atopic dermatitis • Eczema • Lichen simplex chronicus • Contact dermatitis
- Irritant dermatitis

KEY POINTS

- Pruritus is a common symptom in a patient with atopic, irritant, or allergic contact dermatitis.
- The diagnosis requires a careful history and physical examination, at times supplemented with a biopsy and/or patch test.
- The 5 most common allergens from the standard series to cause a positive reaction were gold sodium thiosulfate 0.5%, nickel sulfate hexahydrate 2.5%, balsam of Peru 25%, fragrance mix 8%, and cobalt chloride 1%.

Pruritus, or itch, is a common vulvar complaint that is very often treated empirically as a yeast infection; however, yeast infections are just one of the many conditions that can cause vulvar itch. Ignoring these other conditions can do a disservice to your patient by prolonging their pruritus unnecessarily. Atopic dermatitis, irritant contact dermatitis, and allergic contact dermatitis are extremely common noninfectious causes of vulvar itch that are often underdiagnosed by nondermatologists. Up to 50% of cases of chronic vulvovaginal pruritus in adult women can be attributed to irritant and allergic contact dermatitis,¹ and atopic and irritant contact dermatitis are the most common vulvar disorders that present among prepubertal girls, representing one-third of all patients in an Australian series with vulvar disease.² Identifying these conditions and treating them appropriately can significantly improve a patient's quality of life and appropriately decrease health care expenditures by preventing unnecessary additional referrals or follow-up visits and decreasing pharmaceutical costs. This article provides an approach to the clinical evaluation and management of these 3 eczematous vulvar disorders.

ATOPIC DERMATITIS

Atopic dermatitis (eczema) is a common, chronic inflammatory skin condition characterized by the presence of red itchy patches and thin plaques on the skin. The development

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of atopic dermatitis results from an interaction between hereditary (genetic) and environmental factors, including a defect in the skin barrier function and changes in the weather making the skin more susceptible to irritation. Some patients have a genetic predisposition for the development of allergic IgE reactions to common environmental allergens, as demonstrated by a personal or family history of allergic rhinitis (hay fever), asthma, and/or atopic dermatitis, otherwise known as the atopic triad.

At the microscopic level, greater transepidermal water loss and thus lower skin surface hydration levels are some of the characteristics of a disrupted skin barrier. Vulvar skin is particularly prone to barrier dysfunction because of irritation caused by sweat, urine and/or feces, the use of irritating and/or allergenic products including baby and adult wipes, washcloths, lubricants, hygiene products, deodorized pads, tampons, overwashing, condoms, tight pants, G-strings, shaving, waxing, or cycling, and sexual encounters that may worsen the primary disease. In addition, the changes in the skin barrier may induce an immune response related to type 2 T helper lymphocytes (Th2 type). Severe pruritus is the most common characteristic of eczema. It may be worse during the evening and exacerbated by sweating or wool clothing. This is at least one of the ways that the itch-scratch cycle starts.

Diagnostic Evaluation

A diagnosis of eczema is made by the combination of a history of itching and scratching along with typical clinical findings. Biopsy may also play a role if the diagnosis cannot be confirmed via history and physical examination findings. Evaluating for infection, especially candidiasis or dermatophytosis, is important because it can mimic eczema. It is also possible to develop a superinfection on top of eczema, because both topical corticosteroid use and the eczema itself are correlated with an increased risk of infection compared with noneczematous vulvar skin.³

Atopic dermatitis presents acutely as poorly demarcated erythematous edematous plaques with vesicles, subacutely as erythematous patches or plaques, and chronically as accentuated skin markings or a thickened lichenified plaque.⁴ Excoriations may be present secondary to scratching. Repetitive trauma, scratching, or rubbing may lead to postinflammatory pigmentary alteration, either hyperpigmentation or hypopigmentation (**Fig. 1**).

The histologic findings of eczema depend of the stage of the lesion that is biopsied. In an acute lesion, there is a combination of spongiosis, intraepidermal edema with microvesiculation or macrovesiculation and inflammatory infiltrates composed of lymphocytes, eosinophils, and mast cells in the upper dermis. In an older lesion, spongiosis persists, but vesiculation tends to dissipate. As the lesion progresses in chronicity, the epidermis gets progressively thicker owing to hyperplasia (called acanthosis) and inflammation and spongiosis may become mild or absent.

Management

Patient counseling regarding the chronic nature of atopic dermatitis and its management is critical. Patient education is fundamental to achieve control of this disease. It is important for patients to understand that control, rather than cure, is the goal.

The management of atopic dermatitis can be fundamentally characterized by 4 factors:

- Eliminating irritant and allergen exposure,
- Controlling pruritus,
- Repairing barrier function, and
- Applying topical antiinflammatory agents.



Fig. 1. Vulvar atopic dermatitis in a patient with history of atopic dermatitis.

Eliminating irritant and allergen exposure

Avoiding and eliminating exposure to irritants, especially overwashing, lubricants, topical hygiene products, panty liners, deodorized pads, urine, feces, and excessive perspiration, is important. It is strongly recommended that women use a fragrance-free bar of soap for cleansing. Bubble baths, salts, and oils may irritate the vulvar skin and should be avoided. Addressing mechanical irritation can be critical for some patients, who may be scrubbing with loofahs, towels, and even steel wool! Pointing out the skin damage that these physical irritants may be causing is the first step to modifying behavior.

Similarly, avoiding and eliminating exposure to allergens is also critical. Common allergens to avoid will be addressed elsewhere in this article.

Controlling pruritus

Control of the pruritus, especially during the night, with sedating H1 antihistaminic agents such as hydroxyzine can help to break the itch-scratch cycle. Hydroxyzine is recommended in doses of 10 to 25 mg/d. The most common side effects are dizziness and drowsiness; for this reason, we recommend this medication at bedtime. Another alternative is doxepin, a tricyclic antidepressant, in doses of 10 to 30 mg at bedtime. Drowsiness, dry mouth, and dizziness are the most common side effects of this medication. It is recommended to not use doxepin if the patient has an untreated narrow angle glaucoma or severe trouble urinating. Also this medication should not be used if the patient is taking a monoamine oxidase inhibitor.

Repairing barrier function

Skin barrier dysfunction may produce dry, flaky, itchy skin, which aggravates atopic dermatitis. It may be improved with the appropriate use of petroleum jelly, dimethicone, or zinc oxide paste 2 or 3 times a day.

Applying topical antiinflammatories

Topical antiinflammatory medication is a cornerstone to the treatment of eczema. The more lichenification or epidermal thickening that is present on examination, the higher the potency of topical corticosteroids that will be needed to control disease. Please refer to the article on lichen simplex chronicus in this journal issue for further details. When lichenification is not present, a mild to moderate strength topical corticosteroid is often sufficient, for example, triamcinolone 0.1% ointment. Once the pruritus and physical examination findings are improved, the frequency of use can be tapered or the medicine can be substituted for a lower potency topical corticosteroids. Topical calcineurin inhibitors such as tacrolimus (Protopic) ointment or pimecrolimus (Elidel) cream can be helpful as adjunctive or even primary treatment, especially when steroid atrophy is present on examination.⁵

If a patient does not improve after this management plan is implemented, a biopsy should be seriously considered, especially to rule out an alternative diagnosis such as malignancy. In certain cases, it may be helpful to have your surgical pathology specimen also reviewed by a dermatopathologist, especially if the pathology read is inconsistent with your clinical diagnosis.

IRRITANT AND ALLERGIC CONTACT DERMATITIS***Definitions***

Contact dermatitis is an inflammatory disorder caused by exposure to an external agent that acts as either a direct irritant (irritant contact dermatitis) or as an antigen prompting an immunologic reaction (allergic contact dermatitis). Both types of contact dermatitis are common in adults. In contrast, irritant contact dermatitis is common in children wearing diapers, whereas allergic contact dermatitis is infrequent in this population.² Burning or irritation is more commonly associated with an irritant contact dermatitis and itch is more commonly associated with an allergic contact dermatitis, although there can be overlap in symptom presentation.

Irritant contact dermatitis results from a local toxic effect from application of an irritant to the skin. One hundred percent of people exposed to a specific irritant would eventually develop contact dermatitis if sufficient quantity was applied.

In contrast, allergic contact dermatitis is a type IV or delayed-type hypersensitivity reaction in which the skin is reexposed to an antigen to which the patient has previously been sensitized. Only a small portion of people exposed to a specific allergen will actually develop sensitization over time. Factors that influence the risk of sensitization include the chemical structure of the allergen, an individual's genetic predisposition, age, preexisting tissue injury, and other factors.⁶ Whereas irritant contact dermatitis evolves very rapidly, within minutes to a few hours, the allergic form takes longer to develop, usually 24 to 48 hours. Marren and colleagues⁷ studied the correlation between patch tests results of 135 patients presenting with vulvar symptoms. Of them, 63 patients (47%) had at least 1 positive reaction. Relevant hypersensitivity was found related to ethylenediamine, neomycin, framycetin, and clobetasol propionate.

The Vulva as a High-Risk Site

There is scientific evidence indicating that vulvar skin demonstrates more reactivity to chemical irritants than exposed skin.^{8,9} The vulva can be considered analogous to the lower legs in a patient with venous stasis; both sites are at increased risk of contact allergen sensitization owing to the frequent use of multiple medicaments in the area. Additionally, the vulva is a site of potential friction from sexual activity; maceration from body secretions such as urine, feces, and vaginal discharge; and low estrogen,

which all degrade barrier function.^{10,11} Iatrogenic causes of irritant contact dermatitis include trichloroacetic acid, fluorouracil, podofilox gel, and imiquimod and even abortifacents.^{12–15}

Irritants and allergens abound in over-the-counter products used on the vulva. More than one-half of 114 postmenopausal women questioned in a recent cross-sectional study used at least 1 over-the-counter product in the last 3 months with one-third of the women having used 2 or more products.¹⁶ High-risk products include topical benzocaine cream, sanitary napkins,^{17,18} and baby wipes,¹⁹ to name a few.

In dermatology, we have witnessed an increasing preference for the use of botanic products owing to the belief by patients that these compounds are more natural and safer, in comparison with the synthetic ones. In a study of 66 patients, Corazza and colleagues²⁰ reported that 63.6% used natural products, 16.7% reported the use on regular basis; 71 different herbal products were identified by patients. The products that contained botanic compounds were creams, vaginal suppositories and vaginal plugs, and perfumes and deodorants. The botanic products most commonly used by the patients were chamomile, aloe vera, *Calendula officinalis*, and *Arnica montana*. A total of 16.7% of patients reported side effects resulting in worsening of the preexisting dermatitis or symptoms of itching, burning, erythema, swelling, and vesiculation. All of the patients underwent patch testing with the SIDAPA and the supplementary series. The most common allergens that were positive in the SIDAPA series were nickel sulfate, fragrance mix I, *Myroxylon pereirae*, methylchloroisothiazolinone/methylisothiazolinone and fragrance mix II. Two patients had reactions to topical corticosteroids that were considered clinically significant.²⁰

More evidence is accumulating regarding the association between ingestion of certain irritants and allergens and vulvovaginal symptoms. Examples include nickel dietary intake in patients with nickel allergy; food preservatives, additives, and dyes; and fragrances such as peppermint tea.²¹ This highlights the detective work that is sometimes needed to help identify the culprit allergen for refractory cases of contact dermatitis.

O'Gorman and Torgerson²² studied 90 patients who were tested to allergens in the standard (most common and important allergens in North America) and gynecologic series, the authors found 62 patients (69%) had at least 1 positive result. Forty-one of these patients (46%) had multiple positive results. The 5 most common allergens from the standard series to cause a positive reaction were gold sodium thiosulfate 0.5%, nickel sulfate hexahydrate 2.5%, balsam of Peru 25%, fragrance mix 8%, and cobalt chloride 1%. There were 21 reactions to allergens from the gynecologic series; these included terconazole cream 0.8%, benzoic acid 5%, and paraben mix 16%. In addition, reactions occurred in relation to propylene glycol 10%, clindamycin phosphate 2%, clotrimazole 1%, tioconazole, conjugate estrogen 0.625 mg/g, and sodium lauryl sulfate 0.1% aqueous. Positive reactions to steroids such as tixocortol-21-pivalat 1% were also observed. The most common antibiotic allergen found was neomycin sulfate 20%, and terconazole was the most common antifungal in this series. Benzocaine was also tested and it caused a positive response in most of the patients.²² It is important to consider the cross-reaction between benzocaine and sulfa drugs, para-aminobenzoic acid and paraphenylenediamine, in patients with history of sulfa allergy or a hair dye allergy and vulvar disease.²³

Diagnostic Evaluation

A medical evaluation of contact dermatitis requires

1. A complete clinical history including a questionnaire completed by the patient before seeing the physician (if possible); this can be very helpful to identify the

products (over-the-counter and by prescription) that the patient uses, the symptoms and their severity and the timeline and association with the development of the clinical findings,⁴

2. A high level of suspicion for a possible irritant and/or allergen, and
3. The ability to perform and interpret an appropriate patch test result if allergic contact dermatitis is suspected.

On physical examination, it can be challenging to distinguish allergic contact dermatitis from irritant contact dermatitis and atopic dermatitis, especially in their chronic forms. It is recommended to assume that an irritant component is present in all eczematous vulvar conditions, with or without allergens.¹¹ Intermittent symptoms may be a clue for the diagnosis of allergic contact dermatitis.²³ A diagnosis of allergic contact dermatitis should be suspected in patients who apply multiple agents to their skin and whose pruritus does not respond to usual therapy.⁴ Significant pruritus would favor a diagnosis of atopic or allergic contact dermatitis over pure irritant contact dermatitis, which tends to cause more burning or irritation. The characteristic clinical findings in contact dermatitis are a well-demarcated erythematous vesicular plaque or a scaly patch corresponding to the area of contact (Fig. 2).

A biopsy may be helpful to exclude other pathologies if a diagnosis cannot be achieved based on history and physical examination alone. The histopathology of allergic contact dermatitis is most useful in acute lesions, where microscopic findings include spongiosis, and a mixed inflammatory dermal infiltrate composed of lymphocytes, histiocytes, and a variable number of eosinophils. In severe reactions, vesiculation is also present. Chronic processes are largely characterized by psoriasiform epidermal hyperplasia (otherwise known as acanthosis).



Fig. 2. Irritant contact dermatitis in a woman with urinary incontinence.

Owing to the similar and overlapping clinical and pathologic features of these 2 entities, patch testing can be a useful tool to help identify a specific contact allergen. The patch test is the gold standard for the diagnoses of allergic contact dermatitis. Patch testing is a time-consuming office procedure that requires well-trained personnel and is poorly reimbursed. Patients should be referred to a dermatologist who performs patch testing. This type of testing is very different from the type 1 allergy testing performed by Allergy and Immunology specialists. The TRUE test, which is approved by the US Food and Drug Administration, is a commercially available standard patch test that screens for 35 allergens and 1 negative control spot. Most general dermatologists perform this form of patch testing. The TRUE test can be helpful when positive but many relevant allergens in our vulvar patients are not present in this limited series; thus, a negative test does not rule out allergic contact dermatitis in your patient. It is important to refer a patient with suspected allergic contact dermatitis and a negative TRUE test to a dermatologist who specializes in contact dermatitis and patch testing. Expanded series testing can then be performed by this subspecialized expert.

Management

As in atopic dermatitis, patient education is critical in the management of contact dermatitis. Any component of urinary or fecal incontinence should be managed aggressively. Patients need to understand how to read product labels and become proactive in identifying possible irritants and allergens in the products they are using, because identifying and avoiding the culprit irritant(s) and allergen(s) is critical to achieving disease control. Otherwise, the management of contact dermatitis is almost identical to the management of atopic dermatitis reviewed earlier in this article, which is not repeated here. In severe cases of acute contact dermatitis, a short course of systemic steroids such as oral prednisone may be needed, which is much less commonly warranted for atopic dermatitis.

SUMMARY

Irritant and atopic dermatitis are the most common dermatoses of the vulva in children and adults. Allergic contact dermatitis is common in adult women, but it is uncommon in children. Symptoms of burning and pruritus should alert the physician to the possibility of these conditions. A careful history and good examination will identify most cases. In a minority of individuals, other testing such as skin biopsy or patch testing may help to confirm a diagnosis. Once a diagnosis has been established, irritant and allergenic products should be avoided and an appropriate vulvar care regimen should be implemented. A multipronged approach to management of these eczematous conditions should enable good disease control, thus improving the quality of life of your patients with vulvar pruritus and irritation.

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