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Vesicular hand dermatitis

Abstract: Vesicular hand dermatitis is a type of eczema involving the fingers, hands, and sometimes the feet. It is common in primary care, requiring prompt treatment to prevent chronicity. The cause is often unknown, making the condition challenging to treat. Management consists of avoiding irritants and using emollients and topical corticosteroids.

By Geraldine Sobering, MN, NP, RN and Cheryl Dika, MN, NP, RN

Vesicular hand dermatitis is an acute type of eczema that primarily affects the hands and fingers but can also affect the soles of the feet.[1] It is also known as dyshidrotic eczema, palmoplantar eczema, or pompholyx, from the Greek word meaning bubble.[2,3] The condition affects approximately 15% of the general population, most often affecting healthcare workers, hairdressers, and those in occupations that frequently expose the workers to water. Vesicular hand dermatitis occurs more frequently in women and individuals between 20 and 40 years of age.[2,4-7]

The exact cause of vesicular hand dermatitis is unknown. It may be caused by exposure to allergens and irritants, prolonged use of latex gloves, and frequent hand washing. It has also been linked to a personal or family history of atopic dermatitis.[1,2] Common triggers include exposure to metals such as nickel, cobalt, and chromium; fragrances and preservatives used in cosmetics, lotions, and oils; rubber found in gloves; and certain ingredients in topical medications. Other triggers include the prolonged use of protective gloves, smoking, and emotional stress.[2,5,8] However, often no cause is found.[9]

Keywords: dyshidrotic eczema, eczema, emollients, palmoplantar eczema, pompholyx, topical corticosteroids, vesicular hand dermatitis

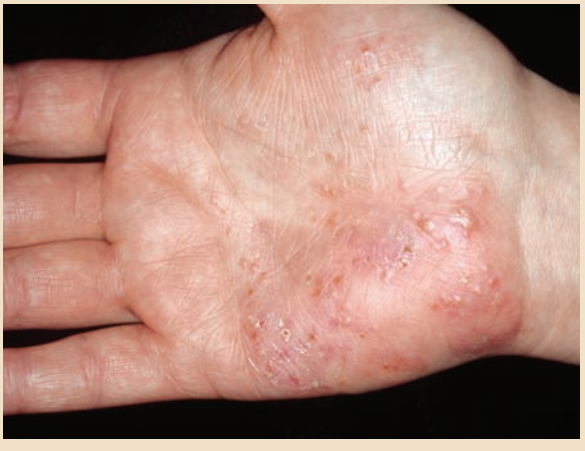
Clinical presentation

Vesicular hand dermatitis manifests as a symmetrical eruption of tiny, intensely pruritic, deep-seated, fluid-filled vesicles that resemble tapioca. The vesicles are localized on the palms, the sides of fingers, and the feet.[10] (See *Dyshidrotic eczema of the hand*.) Itching, prickling, and burning sensations often precede the appearance of the vesicles by 24 hours. After appearing on the skin for 2 to 4 weeks, the vesicles resolve, and the skin peels, usually clearing up without inflammation. Flare-ups occur often and, if they are frequent, the skin may not have adequate time to clear between eruptions. Frequent flare-ups can leave the skin cracked and fissured, increasing the risk of chronicity and putting the patient at risk for secondary bacterial infections.[5,10-13]

The vesicles and cracks can impair manual dexterity, often leading to an inability to properly perform activities of daily life and manual work.[1,4,5] This inability can lead to considerable morbidity, poor quality of life (QoL), increased visits to healthcare providers, increased sick time, loss of income, and even a change in occupation for the individual affected.[7] Because hands are used daily and are highly visible, vesicular hand dermatitis can have a negative psychosocial impact on the patient, interfering with recreational and social activities and leading to embarrassment and emotional distress.[5,7]

Dyshidrotic eczema of the hand

The image below shows vesicles and crusts on the palmar surface of the hand of a patient with dyshidrotic eczema.



Source: Craft N, Fox LP. *VisualDx: Essential Adult Dermatology.* Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins; 2010.

Diagnosis

Diagnosis is based on a thorough understanding of the patient's history with the condition and a skin assessment. The clinical pattern of the lesions is an important clue to the diagnosis.[3,14] When developing the patient's history, NPs should include any preexisting medical conditions, specifically a personal and family history of eczema or asthma, any known allergies, smoking history, onset and duration of the current eruption, the presence of any associated symptoms (such as itching or burning), and the presence of an eruption on other parts of the body. In addition, NPs should inquire about any previous eruptions, treatments that were tried, whether those treatments were effective, and the current use of any topical or oral medications.

Inquiring about the patient's occupation (whether it requires frequent hand washing or the use of occlusive gloves), hobbies, and use of personal care products may offer clues to possible irritants or allergens causing the lesions. It is also important to inquire about how the lesions are affecting the individual's ability to work and perform daily activities and hobbies.[14,15]

The physical exam should include an inspection of the entire skin, including the feet and the nails, as well as documentation of the location of the eruption and a description of the lesions.[12,15] Flare-ups are common and can result in chronicity and an increased risk for secondary bacterial infections. A bacterial swab should be taken if a secondary infection is suspected.[11,13] Additional diagnostic tests are not generally required; however, patch testing to identify a contact allergen should be considered if the dermatitis does not improve with first-line therapy.[1]

Differential diagnoses

Vesicular hand dermatitis can resemble other conditions that affect the hands and feet. Differential diagnoses NPs should consider include allergic contact dermatitis, irritant contact dermatitis, palmoplantar psoriasis, and tinea manuum. Allergic contact dermatitis occurs as an inflammatory response to an allergen. Common allergens include nickel, rubber, fragrance mixes, topical antibiotics, and preservatives. Allergic contact dermatitis may be vesicular and pruritic, often presenting with blisters, erythema, scaling, and excoriation. The usual sites of eruption are fingers, wrists, and dorsum of the hands.[16] Symptoms may spread to parts of the body that have not been in contact with the

allergen. This spreading differentiates allergic contact dermatitis from vesicular hand dermatitis.[15]

Irritant hand dermatitis symptoms are acute and include burning, pruritus, and tenderness to the area exposed to the irritant. The palms, web spaces, and ventral surfaces are most often involved. Repeated exposure to the irritant causes redness and thickening of the skin, which leads to fissures and cracks. The pruritus is not as severe with irritant hand dermatitis, differentiating it from vesicular hand dermatitis.[15,16]

Palmoplantar psoriasis is characterized by pustules and well demarcated, erythematous, scaly plaques on the palms and possibly on soles of feet. It is often misdiagnosed as vesicular hand dermatitis with secondary impetigo infection. The presence of pustules rather than vesicles differentiates palmoplantar psoriasis from vesicular hand dermatitis.[17]

Tinea manuum is a fungal infection that is usually accompanied by tinea pedis and onychomycosis. It is often inaccurately diagnosed as vesicular hand dermatitis because it too presents with extreme pruritus. Features that differentiate tinea manuum from vesicular hand dermatitis include a raised, ring-shaped rash with red borders.[18]

Treatment and management

The management of vesicular hand dermatitis is similar to that of atopic dermatitis, which includes avoiding irritants, maintaining skin integrity with emollients, and providing symptomatic relief with topical corticosteroids. The goal of therapy is to reduce flare-ups and prevent secondary infections.[2,9] The hands are an essential part of daily life, and prompt treatment is crucial to preventing chronicity, preserving functioning, and achieving the best prognosis.[1,4,5]

Management should include identifying and avoiding the causative irritant or allergen. Because the cause is often unknown, completely eliminating causative factors is rarely practical. Even when aggravating factors are identified and avoided, the thick stratum corneum of the plantar skin and the abundance of sweat glands can make vesicular hand dermatitis difficult to treat, causing it to become chronic.[2,3,9,14]

Liberally applying emollients to repair and maintain the skin's barrier is essential. Lipid-rich emollients or greasy ointments, such as petroleum jelly, are best.[14] They should be applied frequently throughout the day, particularly after hand washing.[15] Emollients can increase the effectiveness of topical corticosteroids and should be applied first and allowed to absorb into the skin.[19,20]

Strong topical corticosteroids are recommended to provide relief for burning and pruritus. Topical corticosteroid potency classifications range from highest potency (Class I) to lowest (Class VII). Suitable options include clobetasol propionate 0.05% (Class I) or fluocinonide 0.05% (Class II). Ointments are more potent than creams or gels because they provide more lubrication and occlusion; however, because creams are better absorbed into the skin, they tend to be more cosmetically appealing, resulting in higher patient satisfaction.[21]

Topical retinoids, together with a mild topical corticosteroid, have been shown to be effective in treating severe cases of vesicular hand dermatitis.

Topical corticosteroids should be applied twice a day for up to 2 weeks.[6] The amount of medication used should be based on the fingertip unit method: the amount that can be squeezed from the fingertip to the first crease of the finger. Hand lesions require 1 fingertip unit for the whole hand or half a fingertip unit per side. Twice daily applications for 14 days generally require 15 g of medication.[21]

The use of oral first-generation H1 antihistamines in vesicular hand dermatitis may provide some relief from intense pruritus in cases associated with allergic dermatitis; however, antihistamines do not shorten the course of the dermatitis.[15] If oral antihistamines are used, NPs should note that hydroxyzine has been found to be more effective than diphenhydramine.[2,10]

A topical preparation of the psychotherapeutic drug doxepin has been used as an alternative second-line treatment of pruritus; however, evidence specific to vesicular hand dermatitis is lacking.[22] First-generation antihistamines and topical doxepin may cause sedation and patients need to be advised of the risk of drowsiness and cautioned against driving or operating dangerous machinery when taking these medications.[23]

When first-line topical corticosteroids are ineffective, other treatment options should be considered,

including off-label use of topical calcineurin inhibitors and retinoids as well as systemic therapies, such as oral corticosteroids, retinoids, and immunosuppressants. Topical calcineurin inhibitors are commonly used to treat atopic dermatitis, but evidence that they are more effective than topical corticosteroids in treating vesicular hand dermatitis is limited.[1] Oral corticosteroids, immunosuppressants, and retinoids have varying degrees of efficacy and should be used only if all other therapies have failed; they are associated with an increased risk of adverse reactions and toxicity.[2,4,9,24]

Topical retinoids, together with a mild topical corticosteroid, have been shown to be effective in treating severe cases of vesicular hand dermatitis.[9] Oral alitretinoin is not FDA approved in the US, however research findings show it is helpful for those with severe hand dermatitis and few therapeutic options as a nonimmunosuppressive treatment.[25] If oral retinoids are used, pregnancy prevention measures are mandatory in women of reproductive age because of teratogenic effects.[1]

Immunosuppressants such as methotrexate and cyclosporin, used off-label for short-term use can be effective; however, NPs must ensure that patients are monitored for potential adverse reactions and toxicity.[25] Dupilumab used in conjunction with topical corticosteroid use for moderate-to-severe atopic dermatitis is approved in the US as a subcutaneous injection and is beneficial, especially when alternatives are ineffective or contraindicated.[26]

Botulinum neurotoxin injections and phototherapy can be effective adjunct therapies when applied together with topical corticosteroids.[1,27] Botulinum neurotoxin is believed to decrease pruritus by blocking mediators causing the pruritus. Phototherapy, UV or UVB, has shown efficacy in the treatment and maintenance management of vesicular hand dermatitis under the careful supervision of trained healthcare providers.[1,27]

Key points for patient education

- Liberally use emollients
- Wash hands with soap-free cleanser only when visibly soiled
- Use alcohol-based hand sanitizers when possible
- Avoid direct contact with household chemicals and known irritants
- Wear cotton liners under vinyl gloves at work
- Stop smoking
- Reduce stress

Most cases of vesicular hand dermatitis can be successfully managed in a primary care setting. A referral to a dermatologist is recommended if the diagnosis is uncertain or if patch testing for contact allergic dermatitis is required. Cases that are severe or resistant to conventional therapies may warrant a referral to a dermatologist for further management.[1,6,9]

Along with avoiding irritants and applying topical corticosteroids, effective management requires diligent and ongoing adherence to nonpharmacologic practices to preserve the integrity of the skin. Patients should be instructed to wash their hands as infrequently as possible (such as only when they are visibly soiled) using warm water, and to dry them carefully. Patients should use alcohol-based hand sanitizers when possible because they cause less damage to the skin barrier.

In addition, patients should avoid soaps and direct contact with household chemicals. At work, patients can wear vinyl gloves with cotton liners to keep their hands dry while protecting them against exposure to irritants. Patients should also be encouraged to stop smoking and implement stress reduction practices, as smoking and emotional stress may increase the incidence of flare-ups.[1-3] (See *Key points for patient education*.)

Summary

Vesicular hand dermatitis is a form of acute eczema commonly seen in primary care, yet current research regarding its etiology and management is limited. Measures to prevent flare-ups accompanied by the use of topical corticosteroids are the foundation of therapy. Prompt diagnosis and management are crucial for reducing the frequency and severity of recurrences, to preserve the functioning of the hands, and to improve the patient's QoL. Severe cases or those that are resistant to conventional treatment may warrant a referral to a dermatologist. NP

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