CLINICAL MANAGEMENT

extra

Diagnosis and Treatment of Hand Dermatitis

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Afsaneh Alavi, MD, FRCPC (DERM) • Dermatology and Wound Consultant • Toronto Regional Wound Clinic • Women's College Hospital • Toronto, Ontario, Canada

Sandra Skotnicki, MD, BSc, FRCPC (DERM) • President/Medical Director • Bay Dermatology Centre • Toronto, Ontario, Canada

Gordon Sussman, MD, FRCP(C), FACP, DIP.ABIM, FAAAAI • Professor of Medicine • University of Toronto • Toronto, Ontario, Canada

R. Gary Sibbald, BSc, MD, MEd, FRCPC (MED DERM), MACP, FAAD, MAPWCA • Professor of Public Health and Medicine • University of Toronto • Ontario • Canada • Director • International Interprofessional Wound Care Course & Masters of Science in Community Health (Prevention & Wound Care) • Dalla Lana School of Public Health • University of Toronto • President World Union of Wound Healing Societies • Clinical Editor • *Advances in Skin & Wound Care* • Ambler, Pennsylvania

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This continuing educational activity will expire for physicians on August 31, 2013.

PURPOSE:

To enhance the learner's competence with knowledge of hand dermatitis.

TARGET AUDIENCE:

This continuing education activity is intended for physicians and nurses with an interest in skin and wound care.

OBJECTIVES:

After participating in this educational activity, the participant should be better able to:

1. Demonstrate knowledge of the pathophysiology and assessment of, and diagnostic testing for, hand dermatitis.

2. Apply knowledge of hand dermatitis to patient care scenarios for treatment recommendations and patient education.

ABSTRACT

Hand dermatitis is a common disorder with different clinical presentations. Contact (irritant and allergic) dermatitis is the most common subtype with atopic dermatitis and dyshidrotic eczema as common differential diagnoses. The exact diagnosis and differential diagnoses (psoriasis, fungal infections) are important for specific investigations and treatment plans.
KEYWORDS: hand dermatitis, contact dermatitis, eczema, hyperkeratotic dermatitis

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INTRODUCTION

Hand dermatitis is a common disorder with different etiologies that can present acutely or with a chronic and relapsing pattern. Patients may have foot involvement depending on the etiology. The subtypes discussed in this article include:

- contact irritant dermatitis
- contact allergic dermatitis
- atopic dermatitis (AD)
- dyshidrosis (also known as pompholyx)
- hyperkeratotic dermatitis.

These disorders need to be distinguished from psoriasis and fungal infections (tinea manuum). The terms *dermatitis* and *eczema* often are used synonymously.[1]

Hand dermatitis represents a major occupational problem and accounts for more than 80% of all occupational dermatitis, especially with frequent water exposure (wet work) such as hair dressing, baking, nursing and other healthcare professional occupations, homemaking, and bartending.[2] The hands of a healthcare professional with eczema have an impaired cutaneous barrier, increasing the risk for the transfer of bacteria, including methicillin-resistant *Staphylococcus aureus* (MRSA). In a study by Suneja et al,[3] approximately 33% of nurses in the United States have some form of hand dermatitis.

In Canada, contact dermatitis (>80% of cases are hand dermatitis) is a common work-related compensation claim.[2] Preventive measures against contact dermatitis need to be initiated in the workplace, including proper hand-washing, alcohol hand rinses, and the use of moisturizers. Reading this article will help clinicians accurately diagnose and treat hand dermatitis.

THE IMPACT OF HAND DERMATITIS ON QUALITY OF LIFE

Chronic hand dermatitis interferes significantly with activities of daily living by causing discomfort and embarrassment[4] and has a significant economic impact for the US healthcare system. A Canadian study by Iskedjian et al[5] reported the cost of hand dermatitis ranged from CAN $390 to $737 million per year. With such a high prevalence, increased early recognition and treatment can potentially improve the quality of life and decrease the healthcare burden. The approach to hand dermatitis should include a careful history, physical examination, investigation, and treatment.

HISTORY AND PHYSICAL FOR PERSONS WITH HAND ECZEMA

All patients with dermatological problems should have the following information documented:

- known allergies, including asthma and hay fever, which are more common in persons with atopy
- other preexisting medical conditions (eg, arthritis that is more common with psoriasis)
- topical and systemic medications
- occupation.

The patient history should focus on key information, such as:

- the onset and duration of the eruption;
- any associated symptoms—itching, burning, pain;
- presence of the eruption on other parts of the body; many disorders of the hands also involve the feet; and
- history of previous infections or other complications, such as lost time at work or inability to participate in hobbies or activities of daily living.

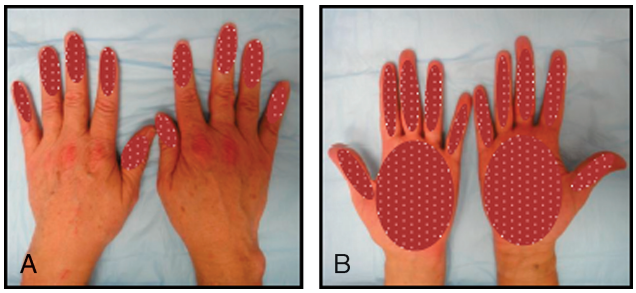
When examining the patient's hands, clinicians should assess the pattern or distribution of the skin eruption (palmar, dorsal surface, or both); whether the changes extend to the wrist; if the finger webs are involved; whether the nails are normal or abnormal and, if abnormal, if the changes relate to the disorder or are unrelated; and other skin changes that may be related to the hand disorder.

A careful history, physical examination of the hands and nails, and skin changes elsewhere may help identify a diagnostic pattern. Clinical investigation of the presenting skin condition may include the following:

- a bacterial swab to identify secondary infections, including *S aureus* that may also be multiresistant to many common antimicrobial agents (MRSA);
- skin surface scale scrapings for fungal microscopic examination and culture will identify a dermatophyte fungus that can mimic chronic hand eczema; and
- patch testing, which is helpful in establishing the diagnosis when contact allergic dermatitis is suspected.

In some patients, it may be difficult to make a definitive diagnosis and will require a skin biopsy for histological diagnosis. The histological diagnosis may distinguish dermatitis from psoriasis or fungal infection, but these findings must then be correlated to the clinical pattern of hand involvement. Most often,

Figure 1.
PATTERN FOR CONTACT IRRITANT DERMATITIS



hand dermatitis is multifactorial and has more than 1 diagnosis, such as AD with coexistent irritant contact dermatitis (ICD).

The authors discuss the subtypes of hand eczema as the next step to determine associations, prognosis, and appropriate treatment plans linked to the clinical subtypes.

CONTACT DERMATITIS: IRRITANT CONTACT DERMATITIS

Contact dermatitis is the most common subtype of hand dermatitis and may be classified as irritant or allergic. Irritant contact dermatitis involves the majority (>80%) of contact hand dermatitis and represents nonspecific reaction of the skin to the contact of a toxic chemical or irritant (Figures 1 and 2).

Irritant dermatitis can occur on the first exposure and represents a local noxious stimulus to the skin integrity. Some agents cause immediate death of the skin, and others trigger the release of inflammatory cytokines from the damaged cells in the epidermis. They remove the surface lipids, denature epidermal keratins, and damage the cell membranes. The damaged lipids in the stratum corneum decrease barrier function, and this results in low epidermal water content below the 10% required to maintain the skin integrity. This defective barrier facilitates the penetration of harmful chemical agents, including ammonia, organic solvents, and other contact irritants. Two major types of ICD are acute and chronic (repeat and multiple or cumulative exposure).

Acute ICD can occur in any person after enough contact with irritants, but cumulative ICD results from repeated skin irritation, such as frequent exposure to soap and water. Mechanical trauma also can damage the skin, and work-related frictional dermatitis (2 surfaces moving in opposite, but parallel directions) presents as chronic, thick, scaly elevated lesions (hyperkeratotic plaques, Figure 11). Occupational ICD is more common in women.

There is a higher prevalence of atopy in women, and individuals with atopy already have a compromised epidermal barrier. Hand dermatitis is a common presentation of adult AD. Individuals with AD are more susceptible to irritants and should be very cautious with occupations in contact with irritants, which often occurs with healthcare workers.

Irritant contact hand dermatitis is most common on the palms and distal aspect of the dorsum of the fingers. Involvement on the sides of the fingers is more common with the coexistence of atopy. If the dermatitis is predominant on the dorsum of the hands, contact allergy is more likely to be a component.

CONTACT DERMATITIS: ALLERGIC CONTACT DERMATITIS

Allergic contact dermatitis (ACD) usually involves dorsum of the hands, fingers, web spaces, and the wrists, where the skin is thinner and the allergen has more potential penetration (Figure 3). The acute phase is often associated with well-demarcated erythema/edema and, in more severe cases, frank vesicles (fluid-filled blisters <1 cm) and blisters (fluid-filled blisters >1 cm). The chronic stage has thickened skin with increased skin surface markings (lichenification), scaling, and

Figure 2.
CHRONIC IRRITANT DERMATITIS

Figure 3.
ALLERGIC CONTACT DERMATITIS

fissuring (a linear crack with a dermal or deeper base). A detailed history is the key in the detection of the allergen. The rash is usually sharply demarcated at the site of the exposure to the allergen and develops over 48 hours or longer (delayed hypersensitivity similar to a tuberculin test). With rechallenge, the eruption may appear much more quickly because of a previously sensitized immune system. The damaged epidermis facilitates the penetration of the allergen and thus sensitization.

If the clinician suspects that a cream, ointment, or other topically applied substance (such as cosmetics, including nail polish) is an allergen, he/she may test the preparation on normal skin of the inner forearm just below the elbow. This is known as the Repeat Open Application Test. An area the size of a silver dollar is outlined with a marker (Figure 4). The suspected allergen is then applied twice a day for a period of 2 to 4 days to elicit local redness. This would demonstrate a positive test and could be due to the active components in the preparation or alternately the incipient that includes preservatives, perfumes, stabilizers, and other chemicals. The average cream or ointment may contain 15 or more components, and each component is a potential allergen with some substances more likely to cause a reaction. It is important for the patient to keep the container and not throw away the potential allergen-containing preparation for further reference. The definitive test will be the patch test applied by a qualified healthcare professional.

Patch testing is the criterion standard to diagnose the specific allergen responsible for ACD.[6,7] Patch tests are applied to the patient's back with occlusion for 48 hours. Common allergens are prepared in liquid, cream, or ointment formats that have concentrations likely to produce an allergic reaction and not a local contact irritant dermatitis. The patch tests are then read at 48 hours initially, and a delayed reading at 96 hours will pick up additional allergens that do not initially react positively. A positive reaction is the presence of fixed erythema that may be elevated or blistered (Figure 5).[8] This type of allergic sensitivity must be distinguished from immediate immunoglobulin E (IgE) reactions associated with asthma and reproduced by immediate allergy prick testing where a drop of fluid on the forearm is then accompanied by a needle prick to draw blood and a positive test associated with an immediate hive-like reaction. This test is often used to identify allergens that trigger asthma and not the delayed hypersensitivity reaction that is characteristic of contact allergic dermatitis and measured with the patch test.

Figure 4.
REPEAT OPEN APPLICATION TEST

Figure 5.
PATCH TEST

The common allergens associated with hand eczema are listed in Table 1. Preservative allergy can occur with individuals who are working in occupations dealing in cutting oils, solvents, and lubricants, including machinists and mechanics who are often male. Females will most commonly acquire preservative allergies from hand creams, but they also use their hands to apply cosmetics to the face and other areas of the body. Fragrances are common as colognes or perfumes, but they are in just about every topical toiletry, moisturizer, or makeup.[7,9] Look for products that are fragrance-free because unscented products may contain a masking fragrance. A common cause of ACD in the workplace is the rubber sensitivity from latex or the chemical accelerators or rubber additives used in both natural rubber latex and nonlatex synthetic gloves. Latex allergy is common in healthcare professionals, especially if they are also atopic.

Many topical antibiotics are available over the counter and used frequently and intermittently, often on relatively thin or disrupted epidermal surfaces. This is where the penetration of the allergen and antigen processing by the skin-associated Langerhans cell can lead to cell activation and migration to the regional lymph node. This results in the potential for the allergic reaction to spread beyond the skin to the rest of the body, even without direct allergen content with these distant sites. Neomycin is a potent allergen, and combination products with neomycin

Table 1.
COMMON ALLERGENS ASSOCIATED WITH HAND DERMATITIS[6,7]

Common Allergen Group/Percentage	Percentage	Sources	Comment
Preservatives	**36.9%**	Solvents, lubricants, oils, cosmetics	**Men:** more frequent with occupational exposure
• Methyldibromo-glutaronitrile	7.4%		**Women:** due to cosmetics
• Formaldehyde	13.0%		
• Quaternarium-15	16.5%		
Fragrances	**20.9%**	Pain relief, analgesics, antipruritics, cosmetics, hair dyes, creams, moisturizers	Fragrances are ubiquitous and may be in unscented products that have a masking fragrance
• Fragrance mix	11.3%		
• Balsam of Peru	9.6%		
Metals	**18.7%**	Safety equipment, furniture, instruments, jewelry, dentistry material	Cosmetic jewelry often leaches nickel, and cobalt is associated with ready-mix cement
• Nickel	12.2%		
• Cobalt	6.5%		
Rubber	**18.0%**	Gloves, fasteners, dentistry material, safety equipment	Common in healthcare professionals
• Thiuram mix	10.2%		
• Carba mix	7.8%		
Antibiotics	**15.1%**	Topical antibiotics	Bacitracin is in triple antibiotic ointments, but not creams
• Bacitracin	7.7%		
• Neomycin sulfate	7.4%		Neomycin may cross sensitize to other specific antibiotics

often start with the first 3 letters "NEO." Neomycin contains 2 allergens: The neosamine sugar is shared with framycetin (Sofra-Tulle), and both products should be avoided. In addition, neomycin has a deoxystreptamine backbone that is shared with the aminoglycoside antibiotic that eliminates gentamicin, tobramycin, and amikacin as systemic antibiotic choices. Bacitracin is also present in combination antibiotic ointments but not in the cream formulations.[7,9]

Common allergens should be avoided, particularly for persons with hand eczema (Figure 6) and a positive patch test to a substance (Table 1). Atopic individuals, particularly healthcare providers, should avoid the rubber allergens by selecting nonpowered, nonlatex, or vinyl gloves. The prognosis of allergic hand dermatitis is poorer than contact irritant dermatitis, based on a study by Thyssen et al.[10]

ATOPIC HAND DERMATITIS

Atopy is a condition with an increased personal or family history of hay fever, asthma, or eczema, occurring as a single manifestation or with a combination of 2 or 3 of the disorders. Individuals with atopy are more likely to have an elevation of the serum IgE antibodies. Atopic dermatitis (Figure 7) is a common disorder with genetic predisposition and lifetime prevalence of approximately 30% in the global population. Hand dermatitis has been seen in 60% to 70% of patients with AD.[9] Irritant contact dermatitis and ACD are more common in individuals with AD. Hand dermatitis is frequently the initial and only manifestation of adult AD.

Atopic hand dermatitis has a variety of presentations. In the acute stage, symmetrical blisters (vesicles) are often present on the sides of the fingers. The fluid will consist of serum, blood, or pus, which becomes a crust when it dries. If there are pustules or hemorrhagic crusts, the acute dermatitis is most often associated with secondary *S aureus* bacterial infections. Cutaneous fungal and viral infections also occur frequently in patients with AD.

In the chronic stage, underlying erythema is often associated with scale that is the end stage of keratin desquamation from

Figure 6.
CLINICAL PATTERN OF CONTACT ALLERGIC DERMATITIS

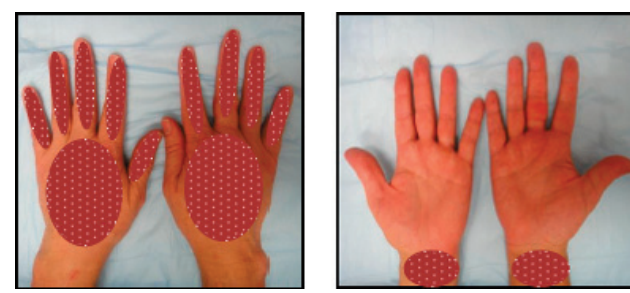
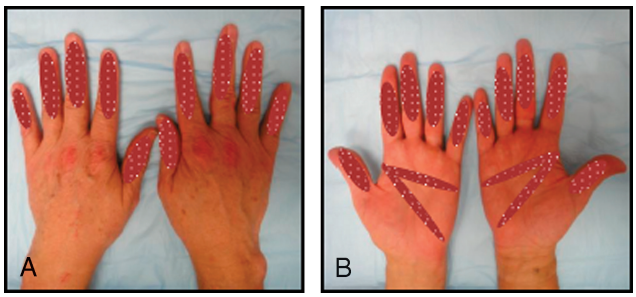


Figure 7.
CLINICAL PATTERN OF CHRONIC ATOPIC HAND DERMATITIS



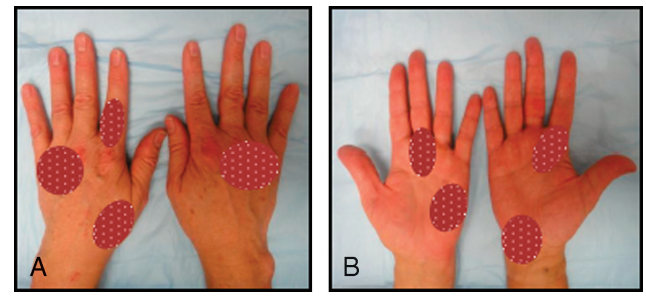
the process of epithelial cell migration from the basal layer of the epidermis to the surface of the skin. Lichenification is often seen on the dorsum of the hands and wrist. Fissuring is often associated with local pain or tenderness most commonly occurring on the tips of the fingers and palms. In longstanding disease, nail changes may be seen including loss of the cuticle and thickening of the nail folds (chronic paronychia) and irregular nail plate surface ridging and thickening. Itching is the most predominant symptom, but more severe cases may be associated with local pain. Both wet work and humidity are risk factors for hand dermatitis.

DYSHIDROTIC HAND DERMATITIS

One form of acute hand eczema is dyshidrotic hand eczema, which is also called pompholyx (Figures 8 and 9). This type of eczema is more common in women and individuals under stress. Acute dermatitis presents as a sudden outbreak of intensely itchy small blisters called vesicles (fluid-filled sacks <1 cm), although frank bullae (fluid-filled blisters >1 cm) may form. Secondary infection may lead to pustular or hemorrhagic fluid or crusts associated with the blistering. There may be surrounding erythema of the hands with associated pain rather than

Figure 8.
DYSHIDROSIS

Figure 9.
CLINICAL PATTERN OF CHRONIC STAGE OF DYSHIDROTIC ECZEMA



the more characteristic itch associated with the acute blisters. The eruption is symmetric and pruritic. This disorder often involves the feet, as well. The blisters may be arranged in oval clusters involving the palms but often extending around the sides onto the dorsal surface. More than 50% of individuals with the pompholyx type of presentation had an atopic diathesis. The lesion appears abruptly and generally persists for 2 to 3 weeks. Hands solely are involved in 80% of patients. Hyperhidrosis (increased sweating) is an exacerbating factor, and the diagnosis is mainly the clinical appearance and presentations.

Patch tests can identify relevant contact allergens. The differential diagnosis also includes a blistering fungus infection, and the need for scraping of the skin surface scale to identify the causative organism under the microscope or from a culture in the laboratory, which can take 4 weeks to grow.

HYPERKERATOTIC HAND DERMATITIS

Thick, hyperkeratotic hand dermatitis (Figure 10) is a form of dermatitis that is also more common in men aged 40 to 60 years.

Figure 10.
HYPERKERATOTIC HAND DERMATITIS

The skin is dry, scaly with hyperkeratotic plaques, cracking, and fissuring. It is a diagnostic challenge and sometimes has an association with psoriasis in some cases, and the patch test usually is negative (most like a contact irritant dermatitis). In cases of hyperkeratotic dermatitis fungal infection, ACD and ICD, and rarely scabies infestations, need to be excluded. Repeated friction may play a role, and they are often resistant to the treatment[2] (Figure 11).

DIFFERENTIAL DIAGNOSIS

The main endogenous risk factor for developing adult hand dermatitis is atopic skin diathesis. Hand dermatitis has different morphological patterns, the differential diagnosis is difficult[11] (Figures 1, 6, 7, 9). Psoriasis is a papulosquamous disease with about 30% of individuals having a positive family history, and it may be associated with arthritis. The skin lesions often present as papules (elevated lesions <1 cm) or plaques. These lesions may be present on the palmar or dorsal surface of the hands. Bright red erythema is often associated with elevated lesions and a silver surface scale. The nails may have surface pits and distal onycholysis (separation from the nail bed with a loss of normal luster). In advanced disease, whole plate involvement or destruction may be noted particularly with arthritis involving the fingers. This arthritis is often a distal single joint involvement (oligoarthritis). The swelling may extend to the soft tissue of the fingers, leading to a sausage type of painful swelling of the finger. Occasionally, a pustular variant of psoriasis may be confused with dyshidrosis, and this painful variant of psoriasis is more common in females who smoke.[12]

If the clinical picture is nonspecific and difficult to distinguish psoriasis from eczematous etiologies, a skin biopsy may be helpful.

Figure 11.
FRICTIONAL HAND DERMATITIS: A TYPE OF CONTACT IRRITANT DERMATITIS

A fungal infection of the hands starts asymmetrically and may be associated with involvement in the groin or on the feet. This involves a surface scale with an increase in skin surface markings with a powdery white scale and, sometimes, an active border or red thread-like area. In time, the fungus will involve the nails with a distal streaking and eventually whole plate involvement that can be confused with psoriasis and other nail disorders. A scraping of the skin superficial scaling for fungus examination under the microscope with a potassium hydroxide mount or a culture will identify the fungal etiology.

MANAGEMENT

Avoidance of Triggers

The hands are routinely exposed to irritants and allergens in the work or home environments. Some individuals with sensitive skin or atopic diathesis develop dermatitis after contact with triggers. The avoidance of common irritant and allergens has a key role in the management of AD.[13] Patients with hand dermatitis need to protect their hands with heavy-duty vinyl gloves because most people with hand dermatitis are allergic to rubber and cannot tolerate rubber gloves. Discard any glove that develops a hole, as this will increase the allergen contact with the skin and is more likely to elicit an allergic response than not wearing gloves at all. The use of washable cotton gloves as a liner under the vinyl gloves would be helpful. The patient with hand dermatitis should avoid direct contact with lemons, oranges, potatoes, and tomatoes, which have irritant properties and are potential allergens. In addition, direct contact with paints, paint thinner, furniture, and shoe polishes should be avoided because they contain solvents.[7]

Topical Moisturizers

Patients with hand dermatitis should wash their hands with lukewarm water and mild soap. They should remove the soap carefully from their web spaces and dry gently. Soaps provide an alkaline environment and are surface-active agents that are not gentle for the skin. Wearing jewelry, including rings on the fingers, is always a place for trapping of the allergens and retaining local moisture.

Skin Hydration and Lubrication

Frequent use of a moisturizer provides protection and strengthens skin barrier function. Moisturizer or emollient should be used in all patients with hand dermatitis. In hyperkeratotic dermatitis, keratolytic agents such as salicylic acid or urea are helpful.

As previously stated, the stratum corneum requires a 10% moisture content to stay intact, and the moisturizers delay transepidermal water loss from a damaged skin barrier, soothe

the skin, and fill the irregularities on the stratum corneum. The emollient moisturizers make the skin smooth and soft (oil barrier to insensible loss of moisture), but humectant moisturizers increase the water content of the epidermis and stratum corneum. Humectants include formulations with glycerin, urea, and lactic acid that bind to the stratum corneum and trap water. When the moisture level goes below 10%, the skin develops a fine-surface scale and may be associated with itch. Topically applied humectants draw the water from the dermis to the epidermis. The water applied to the skin is rapidly evaporated, but when humectant is applied to hydrated skin, the skin retains the water more efficiently. Humectants are more effective if applied to the damp skin after a bath or shower before the skin dries. Humectants also fill irregularities of the skin and allow smoothness of the skin.

If humectant creams are applied to open or inflamed (red) areas, they may sting or burn. The stinging is transient because of hydroscopic properties and does not indicate a true allergy.

Emollients allow the skin surface to feel smooth in touch. There are different emollients available that contain petrolatum, oils, silicone, dimethicone, and so on. The ingredients are found in ointments, creams, and lotions. Topical preparations with higher oil content are more lubricating, and the cosmetic acceptability of the products increases when combined with other ingredients.

Hydration needs to be distinguished from lubrication. Lubrication is the result of coating the skin surface with an oily covering that prevents water loss (emollients such as petrolatum). A cream has a continuous water phase with suspended oil. When the water evaporates, a small amount of oil is left behind. An ointment has a continuous oil phase with a small amount of water. Although oils will leave a more complete protective film behind, ointments may be less cosmetically acceptable and may cause folliculitis (inflammation or infection around the hairs).

Topical Steroids and Immunomodulators

Topical steroids are the mainstay of treatment for hand dermatitis. The palms require a stronger topical steroid than the dorsum of the hands, and stronger topical steroids should be tapered to weaker preparations as a clinical response is documented. Topical steroid sparing can be accomplished with the use of moisturizers, calcineurin inhibitors, light therapy, or systemic agents.[2]

Long-term use of topical steroids for chronic hand dermatitis might cause skin atrophy (thinning), striae (stretch marks), and telangiectasia (small dilated blood vessels). Topical corticosteroids also may lead to contact dermatitis, and the patch test is the criterion standard of diagnosis. Chronic systemic (usually oral) corticosteroids can lead to long-term systemic complications, including Cushing syndrome (adrenal gland insufficiency), cataracts, and osteoporosis.

More recently, calcineurin inhibitors have been shown to prolong the remission of atopic hand eczema.[14] The proposed treatment is to use topical steroids twice daily in the acute stage, to alternate topical steroids with calcineurin inhibitors in the chronic stage, and then to use the calcineurin inhibitors twice a week to prolong a remission along with regular moisturizers and the avoidance of triggers. In a study by Iskedjian et al,[5] the success rates of calcineurin inhibitors tacrolimus and pimecrolimus in the treatment of eczema were compared, and the results were statistically similar.

Secondary infection, often with staphylococcal bacteria, can occur when the skin barrier is compromised. This is often best treated with systemic antibiotics; agents with anti-inflammatory action are especially useful. The antibiotic doxycycline has been shown to have a beneficial effect on MRSA.[15] Individuals with very high IgE levels often require long-term anti-inflammatory antibiotics. It is also important to periodically check bacterial sensitivities with a swab to identify resistance and suitable alternative agents.

Phototherapy is an effective treatment of hand dermatitis with exposure of patients' hands to ultraviolet light (UVA, UVB). Narrowband UVB (311 nm) delivers more energy into the lower epidermis than broadband UVB and is more effective.[2] UVA1 is an effective and safe treatment for dyshidrotic dermatitis.[16]

Acute dermatitis may respond to systemic steroids when topical therapy is insufficient. Systemic steroids have several adverse effects and the danger of requiring repeated and prolonged therapy in resistant cases. This is when other therapies, including ultraviolet light, may be useful. More recently, oral retinoids have a beneficial effect with resistant hand eczema, as well as systemic immune modulators, including methotrexate, cyclosporine, azathioprine, and mycophenolic mofetil.[2]

SUMMARY

In summary, hand eczema can have a devastating effect on an individual's quality of life and may even necessitate a change in occupation. It can be itchy and painful and may interfere with recreational activities, as well as psychosocial functions. Treatment starts with an accurate diagnosis obtained through appropriate history, examination, and investigations. The subtype of eczema and the clinical severity determines treatment, but most cases of hand eczema can be managed with appropriate treatment.

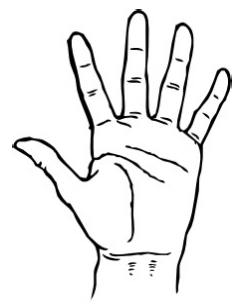
HAND DERMATITIS ENABLER

Topical Corticosteroids

Ointments may be more effective than creams

Intralesional Steroid Injections

Ultraviolet Light Treatment



Steroid-Sparing Agents

*Topical Calcineurin Inhibitors
*Moisturizers

Systemic Agents

Topical Steroid	
Potency	**Examples**
Low	Hydrocortisone 1% cream Desonide 0.05% cream
Moderate	Amcinonide 0.1% cream Betamethasone 0.1% cream
Potent	Flucinolone cream Desoximetasone cream
Very potent	Clobetasol 0.05% cream Halobetasol 0.05% cream

Dermatological Bases	
Lotion	Powder in water
Cream	Oil in continuous water phase
Ointment	Water in continuous oil phase
Paste	Powder in continuous oil base
Gel	Powder in a lattice structure: ***Do not compound***

Behavior and Lifestyle Change

- ❖Use lukewarm or cool water (avoid hot water)
- ❖Use mild (soapless) cleansers (avoid fragrances, antibacterial soaps)
- ❖Apply cream generously and immediately after washing
- ❖Use products with few ingredients for sensitive skin
- ❖Moisturize the skin continuously and repeatedly
- ❖Avoid using washcloths and scrubs
- ❖Bar soaps have less preservatives than liquids
- ❖Wear cotton gloves under vinyl or nonlatex gloves
- ❖Remove rings before wet or dry work

Systemic Therapies	
Type	**Dose**
Anti-inflammatory antibiotics	Doxycycline 50-200mg Tetracycline 250-2000mg Trimethoprim 100-400mg Erythromycin 250-2000mg
Systemic steroids	0.5-1mg/kg day (20mg or higher and taper)
Retinoids	Alitretinoin 10-30 mg Acetretin 10-50mg
Cyclosporin	3-5 mg/kg/day
Mycophenolic acid	2-3 gms per day
Methotrexate	0.2 to 0 .4 mg/per kg/wk (7.5 mg and/higher)

Light Therapy	
Type	**Protocols**
PUVA/ bath PUVA	x 1-3/wk
UVA1	x 3-5/wk
Narrow band UVB	x 2-3/wk

Topical Steroid Sparing Agent	
Type	**Examples**
Calcineurin inhibitors	*pimcrolimus *tacrolimus
Moisturizers	*humectants *lubricants

PRACTICE PEARLS

- Avoid irritants and allergens
- Minimize water exposure
- Use lubricating and hydrating moisturizers for maintenance therapy to prevent recurrences
- Treatment and prognosis is based on treating the cause of the appropriate subtype of eczema and avoiding triggers

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