



Contact Dermatitis to Cosmetics

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Abstract

Allergic contact dermatitis (ACD) to cosmetics is extremely common—probably the most common reason patients present for patch testing. The diagnosis should initially be suspected based on the patient history and the distribution of the dermatitis. Once the diagnosis is suspected, empiric recommendations for low allergenicity products should be implemented until patch testing is performed. The face is exposed to greatest number of cosmetics, and as a result, facial dermatitis is the prototypical presentation of cosmetic contact dermatitis. In particular, the eyelids are frequently involved, with common sources including shampoo, conditioner, facial cleansers, makeup remover, mascara, nail polish, acrylic nails, makeup sponges, eyelash curlers, and allergens transferred from the hands. Other typical facial distributions include lateral facial dermatitis, central facial dermatitis, and generalized facial dermatitis, each with its own unique set of most likely causes. Lateral facial and/or neck dermatitis is often a “rinse-off” pattern, with shampoo and/or conditioner rinsing down over these areas. Central facial dermatitis, when due to ACD, can be due to gold being released from gold rings and contaminating makeup foundation or to ingredients in moisturizers, wrinkle creams, topical medications, or makeup. Sparing of the lateral face is largely due to the fact that patients are more assiduous about applying the aforementioned substances to the central face than to the lateral face. Generalized facial dermatitis should trigger consideration of airborne contactants, facial cleansers, makeup foundation, and moisturizers and medications that are being applied confluent. Once *adequate* patch testing has been performed, there are a number of extremely helpful resources to help patients find products that are safe for use, such as the American Contact Dermatitis Society’s “Contact Allergen Management Program” app.

Keywords Contact dermatitis · Cosmetic dermatitis · Allergic contact dermatitis · Eczema

Introduction

Contact dermatitis to cosmetics is extremely common—probably the most common reason patients present for patch testing. The diagnosis should initially be suspected based on the patient history and the distribution of the dermatitis. Once the diagnosis is suspected, empiric recommendations for low allergenicity products should be implemented until patch testing is performed. Once *adequate* patch testing has been performed, there are a number of extremely helpful resources to help patients find products that are safe for use.

Thus, the relevant issues are patient history, distribution of the dermatitis, empirical recommendations for low allergenicity products, adequate patch testing, and providing resources to allow patients to find acceptable cosmetic products while

still avoiding their allergens. Important and clinically relevant aspects of each issue will be covered in sequential order.

Role of Patient History

The most common history in patients presenting with cosmetic contact dermatitis (CCD) is that the patient did not change anything and the dermatitis simply developed “out of the blue.” It is likely that many patients do develop CCD after changing to a new product, but these patients probably make the connection to the product switch, go back to their old product, and do not present to a dermatitis specialist.

A potentially misleading aspect of the history is that when dermatitis develops, many patients empirically change the products they are using on the involved area. If they do not get better, they take it as evidence that the products that were discontinued were not the cause of the dermatitis. This is not a sound conclusion because it is likely that the new product contains the same allergen as the original product.

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Another common scenario is that patients may change one product (a hand soap used at home, for example) but not eliminate other exposures (hand moisturizers and hand soap used at work). When they do not improve, they again take it as evidence that the product they stopped was not causing a problem. Patch testing may later reveal that all three products contained allergens to which they were allergic, and they only improve after eliminating all three products.

Finally, if patients have been using a product for a long time without incident then a dermatitis develops, they assume that the product could not be the cause. This is fallacious because (1) they could have developed sensitivity to an allergen to which they were not previously allergic or (2) the formulation of the product could have changed.

For all of the above reasons, history is often misleading when patients present with CCD. The biggest mistake the clinician can make is to rule out CCD based on the history. If a patient presents with a new onset pruritic dermatitis in a distribution that is suggestive of CCD, it should be managed as CCD, regardless of the history, until CCD is ruled out either by adequate patch testing with or without an adequate trial of extremely low allergenicity products. This is why the author does not spend a significant amount of time eliciting history in patients with suspected CCD before patch testing—the main role of history is to determine if patch testing beyond an adequate cosmetic screening tray is necessary.

Alternatively, the history is crucially important after patch testing is completed. This is when a comprehensive history to generate a list of possible exposures to the allergens that tested positive is carefully reviewed with the patient to determine if any are potentially relevant.

Distribution as the Primary Clue to Cosmetic Contact Dermatitis

The location of involvement is one of the primary clues to the diagnosis of contact dermatitis. Certain distributions, such as eyelid dermatitis, lateral facial dermatitis, and hand dermatitis, should always trigger the astute clinician to at least consider the possibility of CCD.

Other aspects of the distribution or arrangement of a dermatitis can also have a strong influence on the clinician's suspicion of contact dermatitis. For example, geometrical arrangements or asymmetry of involvement should always trigger a consideration of contact dermatitis.

Cosmetic Contact Dermatitis of the Eyelids

The eyelids are one of the most sensitive areas of skin due primarily due to the fact that much of the upper eyelid skin is occluded while the eye is open and secondarily due to a thin

stratum corneum and epidermis. As a result, any substance used on the scalp, face, or hands may produce allergic or irritant eczematous contact dermatitis of the eyelids, while those primary sites, due to a more robust stratum corneum and lack of occlusion, remain unaltered. Airborne pollen, dust, and all types of volatile agents may affect the eyelids first and exclusively. Contamination of the fingers with small amounts of allergen can result in transfer of sufficient material to the eyelids to produce dermatitis when little or no visible sign of dermatitis is found elsewhere on the body. Marked edema of the eyelids is often a feature of poison ivy or hair dye dermatitis.

As a result, eyelid dermatitis is a common presenting complaint in the dermatology or allergy office and is not simply a problem of contact dermatitis. Almost as many cases are found to be due to seborrheic dermatitis, with additional cases identified as atopic dermatitis, and nonspecific irritant dermatitis, depending on the investigator and the country in which the study is conducted. Belsito reported 105 cases of eyelid dermatitis in North America and found that when only the eyelids were involved, the most common cause was seborrheic dermatitis (46.3%). Contact dermatitis was the next most frequent diagnosis (35.2%). When other areas of the face were affected, allergic contact dermatitis was the most frequent cause [1].

For the reasons discussed above, contact dermatitis of the lids and periorbital area is primarily caused by cosmetics applied to the hair, face, or fingernails more often than by cosmetics applied to the eye area. It is important to bear in mind that the sites to which some cosmetics are applied may not be affected. This is particularly true for shampoo, conditioner, and nail polish. Similarly, allergic and irritant reactions to face creams and makeup (foundation lotions and bases) may be limited to the eyelids [2].

Distinguishing Allergic Contact Dermatitis and Irritant Contact Dermatitis of the Eyelids

Allergic contact dermatitis (ACD) and irritant contact dermatitis (ICD) of the eyelids are not always readily distinguishable based on clinical findings. The degree of inflammation may be of the same order (usually mild to moderate), with accentuation of wrinkling and skin marking common to both. However, patients with ACD typically report more pruritus, while those with ICD often report more "irritation." Potential irritants in eye area cosmetics and in cosmetics in general are usually weak; repeated exposures are often required to induce a reaction. Nor do all exposed persons react as they do generally with strong irritants [3]. Many patients with low-grade ACD of the eyelids will wrongly blame eye makeup because they notice a rapid increase in symptoms following its application—this is almost always a sign of increased irritability due to the ACD and the patient can tolerate the suspect eye makeup after the ACD has been diagnosed and the allergen eliminated.

Causes of Cosmetic Contact Dermatitis of the Eyelids

Common sources of contact dermatitis of the eyelids include shampoo, conditioner, facial cleansers, makeup remover, mascara, nail polish, acrylic nails, makeup sponges, eyelash curlers, and allergens transferred from the hands. Common allergens include gold, fragrances, formaldehyde-related preservatives, methylisothiazolinone, and betaine-related allergens [4].

Shampoos and conditioners are probably the most common causes of isolated ACD and ICD of the eyelids [5]. This is likely due to the fact that these products are rinsed down over the exposed skin of the closed eyelid while showering, and then the eyelid is open the rest of the day, occluding any residue in the eyelid fold.

Other hair products that are generally left on for longer periods before rinsing or are not rinsed off at all, such as dyes, bleaching agents, setting lotions, sprays, gels, and mousses less commonly affect the eyelids and are more likely to produce scalp or forehead dermatitis in addition to the eyelid dermatitis (Fig. 1).

Patients allergic to ingredients in facial cleansers typically demonstrate a generalized facial dermatitis, although it may involve or be accentuated on the eyelids. Makeup removal wipes have been a particular problem, as they are often used without subsequent rinsing, allowing for significant residual allergen or irritant to be left on the skin. Traditional liquid eye makeup removers seem to be less problematic.

Water-based mascara may contain several emulsifiers which can be irritating to certain individuals who may tolerate oil-based, waterproof mascara. Alternatively, waterproof mascaras often contain volatile organic solvents that keep the mascara in liquid form in the bottle and then rapidly evaporate away with application, resulting in the solid material deposited on the eyelashes. These volatile organic solvents can also be irritating. However, given the individual variability in terms of susceptibility to different irritants, a person who does not tolerate waterproof mascara may very well tolerate water-based counterparts and vice versa. Thus, patients with suspected irritant dermatitis from mascara should be instructed to discontinue all eye makeup until the irritant dermatitis resolves and then can attempt to reintroduce the alternate type of

mascara (waterproof vs nonwaterproof). However, some patients will not tolerate either, in which case one of the products that increases eyelid growth (bitanoprost, for example) can be recommended. Shellac is the one allergen that seems to be specific to mascara.

Similarly, persons who get irritant dermatitis from cream eye shadow may tolerate pressed powder eye shadow, and vice versa. Allergy to eye shadow is quite rare.

Mascara can also cause ACD of the eyelids, with shellac (also known as lacca) as the typical responsible agent. Shellac is tested at 20% in ethanol. Shellac is the resinous secretion of the female *Laccifer lacca* bug (hence the name “she”-lac) [6, 7]. Pigments in mascara are another possible cause of ACD, although they are much less common causes than shellac [8].

ACD and ICD of the eyelids due to other types of makeup are surprisingly infrequent. Irritant dermatitis due to eye shadow, while rare as a primary diagnosis, is a frequent complicating factor when eyelid dermatitis happens due to other contactants.

Despite their reputation as common causes of eyelid dermatitis, nail polish and acrylic nail dermatitis are, in the author’s experience, rare causes of isolated eyelid dermatitis. Instead, they commonly cause an ectopic dermatitis that affects some combinations of the eyelids, face, and neck while sparing the paronychia area.

Completely dry nail polish and acrylic nails become polymerized and are generally not allergenic, but full polymerization may not occur until several hours or days after it feels dry [9]. The common allergen in nail polish is toluene-sulfonamide formaldehyde resin, and there are many nail polishes that are free of it and are therefore “hypoallergenic.” With acrylic nails, on the other hand, there is no hypoallergenic option, as all types (acrylic nails, gel nails, solar nails, UV nails, nail wraps, silk nails, etc.) are based on allergenic acrylates. Interesting, there are now a number of nail “polishes” that are actually acrylates and cause ACD in individuals allergic to acrylates. These polishes can be reliably identified because they are marketed as lasting 2–3 weeks without chipping. While resins and acrylates are common, well-known nail allergens, there are several less common allergens in nail cosmetics, including benzophenones, phthalic anhydride/trimellitic anhydride/glycols copolymer, or phthalates [10, 11].

Fig. 1 Allergic contact dermatitis of the eyelids caused by shampoo



Cosmetic Contact Dermatitis of the Face

ACD of the face most commonly occurs as a result of allergens either applied directly to the face, such as moisturizers, soaps, and makeup, or allergens rinsing down over the face, such as shampoo and conditioner. Similar to the eyelid, allergens can also be transferred to the face indirectly from airborne or hand-to-face exposure. In addition, most of the allergen sources noted previously as potential causes of eyelid dermatitis should be considered in cases of more generalized facial dermatitis, with or without eyelid dermatitis.

Patterns of Facial Contact Dermatitis

The four general patterns of facial contact dermatitis are as follows: (1) lateral face, (2) central face, (3) unilateral predominance, and (4) full face. Each pattern should trigger suspicion of a different set of likely causes:

1. Lateral facial dermatitis involving the pre-auricular areas, post-auricular area, jaw lines, and/or lateral neck is most commonly due to shampoo and/or conditioner rinsing down over these areas (Fig. 2). Other entities that can present in this distribution include irritant dermatitis, atopic dermatitis (particularly keratosis pilaris), and seborrhea.
2. Central facial dermatitis involving the cheeks, nose, chin, and forehead, when due to ACD is most commonly a result of gold being released from gold rings and contaminating makeup foundation, with other possibilities including moisturizers, wrinkle creams, topical medications, or makeup. The primary differential diagnosis includes irritant

dermatitis, seborrhea, and rosacea. Sparing of the lateral face is largely due to the fact that patients are more assiduous about applying the aforementioned substances to the central face than to the lateral face (Fig. 3).

3. Generalized facial dermatitis should trigger consideration of airborne contactants, facial cleansers, makeup foundation, and moisturizers and medications that are being applied confluent (Fig. 4).
4. Unilateral facial dermatitis strongly argues for an ectopic source, primarily transfer from the hands. Relevant sources are nail cosmetics, moisturizers, and soaps. Connubial or consort contact dermatitis owing to hair dyes, fragrances, and topical medication used by the partner may also occur on one side of the face.

Status Cosmeticus

Many currently available cosmetics are free of compounds that produce most allergic hypersensitivity. However, nonspecific irritation from cosmetics still occurs. Thus, some persons appear to be in a condition of “status cosmeticus,” in which every cosmetic or soap applied to the face produces itching, burning, or stinging sensations.

Patients who have status cosmeticus typically have totally normal looking skin or at most a barely discernible erythema or follicular irritation that is totally out of proportion to the complaints of burning, stinging sensations.



Fig. 2 Allergic contact dermatitis of the lateral face caused by shampoo



Fig. 3 Allergic contact dermatitis of the central face due to allergy to gold being released from jewelry



Fig. 4 Allergic contact dermatitis of entire face due to allergy to makeup foundation

Results of patch tests using the various implicated cosmetics and soaps are negative, as are results of “use” tests performed on the antecubital fossa. A scraping to rule out demodicosis should be considered and a therapeutic trial of *oral* therapy for rosacea and/or demodex and/or seborrheic dermatitis may be worthwhile as a “diagnostic therapeutic trial.”

Frosch and Kligman have confirmed that stinging from topically applied substances occurs mainly on the face [12]. Predisposition to complaints of stinging was greater in women than in men and greater in whites than in blacks, especially in light-complexioned persons who tan poorly. Lahti showed that cinnamic acid compounds used in cosmetics can produce nonspecific redness and itching when applied to human skin [13]. This is probably related to prostaglandin synthesis and is blocked by prostaglandin inhibitors, such as indomethacin

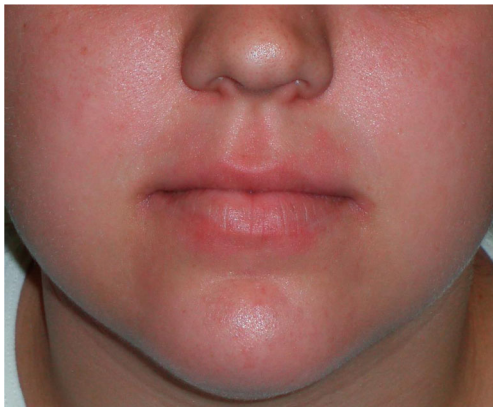


Fig. 5 Allergic contact dermatitis of the lips due to allergy to lanolin in lip product

and aspirin, and a therapeutic trial of one of these agents is worth considering [14, 15].

Once a patient has entered status cosmeticus they may need to avoid all facial cosmetics for a prolonged period of time, perhaps 6 months to a year, and should attempt to avoid allowing shampoo and conditioner to contact the face as well. Most important to avoid are moisturizers and surfactants, with “dry” cosmetics, such as powder foundations, occasionally being tolerated [16]. Once the total avoidance of exposure has led to resolution of redness and stinging, an attempt can be made to slowly reintroduce extremely bland emollients, such as canola oil, olive oil, or virgin coconut oil.

Pigmented Facial Contact Dermatitis

Brown or bluish pigmentation of the face has been described as a dermatosis of great cosmetic significance in Japanese women since the 1950s [17]. Many of the cases resemble the melanosis described by Riehl in Vienna in 1917, and the term “Riehl’s melanosis” is commonly used by Japanese dermatologists for the condition [18]. Extremely mild, even sub-clinical, allergic contact dermatitis with post-inflammatory hyperpigmentation as the main clinical finding has been demonstrated as the cause of the pigmentation [17].

Cosmetic Contact Dermatitis of the Scalp

The scalp is highly resistant to contact dermatitis, with products applied to the hair often producing dermatitis of the eyelids, face, neck, and hands, while the scalp remains uninvolved. The main exceptions to this rule are paraphenylenediamine or glyceryl thioglycolate, which can cause marked scalp reactions. In addition, permanent wave solutions and hair dyes applied improperly may produce severe irritant reactions and alkaline burns of the scalp that can remain painful for months.

Cosmetic Contact Dermatitis of the Lips

It is the author’s experience that patch testing is most commonly helpful for cheilitis when there is erythema that extends beyond the vermillion border. If the involvement affects the top and bottom lips and both sides equally, then the cause is likely a lip balm or lip cosmetic with lanolin, propolis, propyl gallate, and flavor/fragrance being the most likely culprits. If the lower lip is involved to a greater degree than the upper lip and if one side is involved more than the other, then toothpaste is the likely cause and the likely allergens are flavor, cocamidopropyl betaine, or propylene glycol (Fig. 5).



Fig. 6 Allergic contact dermatitis of the neck from perfume

Cosmetic Contact Dermatitis of the Neck

The neck, like the eyelids and genitalia, is a highly reactive site. Shampoo, conditioner, and facial cleansers that rinse down from the face or hair regularly cause ACD of the anterolateral neck. The suspicion of this phenomenon should be even higher if the dermatitis is centered on the folds of the neck. Perfume is also a frequent cause of ACD of the neck, with the “atomizer sign,” a circular pattern of dermatitis from spray on perfume [19] (Fig. 6).



Fig. 7 Allergic contact dermatitis of the axilla due to deodorant

Cosmetic Contact Dermatitis of Axilla

Deodorants, antiperspirants, and shaving preparations are common causes of contact dermatitis of the axillary vault. ACD due to metal released from razor blades is often considered as a potential cause of ACD of the axilla, but the amount of release from razors is generally well below the threshold necessary to elicit a reaction, and this axillary ACD from nickel is rare. Irritant contact dermatitis from shaving, folliculitis, inverse psoriasis, and axillary granular parakeratosis are all common items in the differential diagnosis of axillary dermatitis (Fig. 7).

Cosmetic Contact of the Genital Region

Britz and Maibach have shown that the vulvar skin is more readily irritated than the forearm [20]. Often low-grade erythema of the vulva is not readily apparent because of pigmentation of the skin of the vulva. The patient may complain of burning and stinging of the vulva, but examination may not readily reveal dermatitis.

Several studies that have shown a high rate of positive patch tests in cases of vulvar pruritus or rash, but the primary culprits are medicaments rather than cosmetics [21, 22]. In contrast, in cases of vulvodynia, patch testing is rarely helpful [23, 24].

Potential causes of isolated irritant or allergic cosmetic contact dermatitis of the vulva include feminine hygiene sprays, cleansers, and deodorants. While allergy to feminine hygiene sprays has been reported as a result of fragrance and emollient ingredients, irritant reactions from volatile propellants being deposited on the skin due to application too close to the vulvar area are much more common than reactions of the allergenic variety [25, 26].



Fig. 8 Allergic contact dermatitis of the perianal region from preservatives in a personal care wipe

Cosmetic Contact Dermatitis of the Anal Region

Poor hygiene following bowel movements or low-grade fecal incontinence are the most common causes of anal pruritus. One of the first recommendations made by primary care physicians or gastroenterologists in cases of anal pruritus is to start using personal care wipes to improve hygiene. Although the wipes may solve the original problem, they also introduce a number of ingredients that are potential contact allergens, most commonly preservatives (such as methylisothiazolinone, iodopropynyl butylcarbamate, parabens, and formaldehyde releasers), fragrances, and propylene glycol (Fig. 8).

If a contact dermatitis develops, the patient and physician, not knowing that the source of pruritus has changed, increase the use of the wipes based on the assumption that hygiene is still the problem, initiating a vicious cycle of worsening dermatitis and pruritus. Obviously, a detailed history about anal hygiene is crucial in working these cases out.

Generalized Cosmetic Contact Dermatitis

Generalized dermatitis, defined as a widespread dermatitis affecting multiple body areas, is a common reason for referral for patch testing. There are a number of potential causes of generalized ACD, but in terms of cosmetics, the primary concerns are body washes and moisturizers.

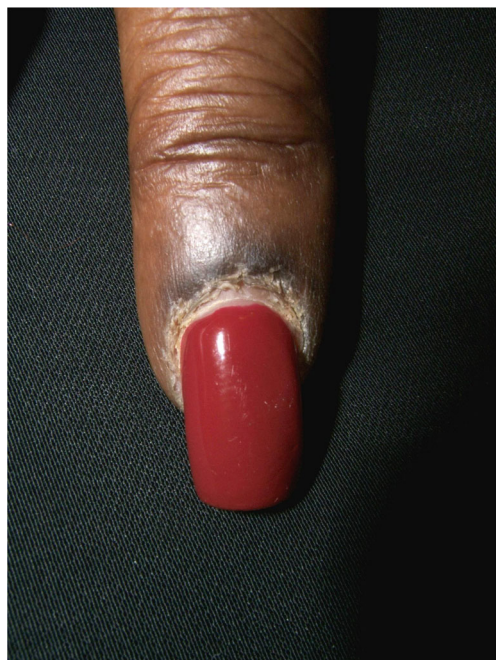


Fig. 9 Periungual allergic contact dermatitis due to acrylates

Cosmetic Contact Dermatitis of the Nail Unit

As discussed earlier, allergy to nail cosmetics seems to more frequently cause ectopic contact dermatitis of the face, eyelids, or neck than dermatitis of the nail unit. However, both paronychia and pterygium can occur and appear to be more common with acrylic nails than with nail polish [27] (Fig. 9).

“Sculptured” artificial nails are a popular method of improving the cosmetic appearance of natural nails. There are a number of varying ways of applying them, and the range is

Table 1 Minimum allergens necessary to adequately assess suspect cosmetic contact dermatitis

Fragrance:
Cinnamic aldehyde 1% pet
Fragrance mix I 8% pet
Fragrance mix II 14% pet
Jasminum officinale oil 2% pet
Myroxylon pereirae 25% pet
Sorbic acid 2% pet
Tea tree oil 5% pet
Ylang ylang 2% pet
Preservatives:
2-Bromo-2-nitropropane-1,3-diol 0.5% pet
Diazolidinyl urea 1% pet
DMDM hydantoin 1% pet
Formaldehyde 1% aq
Imidazolidinyl urea 2% pet
Iodopropynyl butylcarbamate 0.1% pet
Methylchloroisothiazolinone/methylisothiazolinone 100 ppm aq
Methylisothiazolinone 0.2% aq
Paraben mix 12% pet
Quaternium 15 2% pet
Metals:
Gold sodium thiosulfate 2% pet
Nickel
Nail polish and acrylates:
Ethyl acrylate 0.1% pet
Ethyl cyanoacrylate 10% pet
2-Hydroxy-4-methoxybenzophenone-5-sulfonic acid (benzophenone-4) 2% pet
Hydroxymethyl methacrylate 2% pet
Methyl methacrylate 2% pet
Tosylamide formaldehyde resin 10% pet
Other:
Amidoamine 0.1% aq
Benzalkonium chloride 0.1% pet
Benzyl alcohol 10% pet
Cetyl stearyl alcohol 20% pet
Chlorhexidine digluconate 0.5% aq
4-Chloro-3-cresol (PCMC) 1% pet
Chloroxylenol (PCMX) 1% pet
Cocamidopropyl betaine 1% aq
Cocamide DEA 0.5% pet
Colophony 20% pet
Compositae mix II 5% pet
Decyl glucoside 5% pet
3-(Dimethylamino)propylamine (DMAA) 1% aq
2,6-Ditert-butyl-4-cresol (BHT) 2% pet
DI Alpha Tocopherol 100%
2-Ethylhexyl-4-methoxycinnamate 10.0 pet
2-hydroxy-4-methoxybenzophenone (benzophenone-3) 10% pet
Lanolin alcohol (Amerchol 101) 50% pet
Oleamidopropyl dimethylamine 0.1% aq
Phenoxyethanol 1% pet
p-Phenylenediamine 1% pet
Propolis 10% pet
Propylene glycol 30% aq
Sesquiterpene lactone mix 0.1% pet
Sorbitan sesquioleate 20% pet

ever increasing. Terms in common use today are acrylic nails, gel nails, solar nails, nail wraps, and shellac polish. While there are literally dozens of different acrylates used in these products, a screening series consisting of hydroxyethyl methacrylate, hydroxypropyl methacrylate, triethyleneglycol dimethacrylate, ethyl acrylate, ethylene glycol dimethacrylate, and 2-hydroxyethyl acrylate has recently been recommended, although it appears that a three-allergen panel (methyl methacrylate, ethyl acrylate, and hydroxyethyl methacrylate) will detect approximately 90% of cases [28, 29].

Dermatitis of the periungual tissue is quite uncommon with allergy to nail polish. Ectopic dermatitis affecting the face, neck, and eyelids is much more common.

Preformed plastic nails are made with completely cured plastic and do not cause allergic reactions. The cyanoacrylate adhesives used to allow adhesion of the plastic nails to the nail plate, however, may rarely produce allergic contact dermatitis.

Minimum Necessary Allergens for Adequate Patch Testing in Suspected Cosmetic Contact Dermatitis

Unfortunately, the currently available T.R.U.E. Test patch testing system (SmartPractice, Phoenix, AZ) does not adequately cover cosmetic allergens. Table 1 provides a list of the absolute minimum required allergens necessary to reasonably rule out ACD to cosmetics in the author's opinion. This list is not all inclusive, as there are numerous rare allergens, but it should adequately assess at least 90% of patients with cosmetic contact dermatitis.

Empiric Management of Suspect Cosmetic Contact Dermatitis Prior to Adequate Patch Testing

Every attempt should be made to have adequate patch testing performed in patients with suspected cosmetic contact dermatitis. However, even when patch testing is readily available, there is a lag between when the cosmetic contact dermatitis is suspected and when the patch testing can be performed. In other cases, adequate patch testing is not possible, either because there are no providers performing adequate patch testing in the area that is geographically accessible to the patient or because the patient cannot afford the cost of adequate patch testing. In these situations, either prior to patch testing or if patch testing is not available, empiric management should be implemented. While there is no standard published approach, the author has had excellent success with the approach outlined in Table 2.

Management of Cosmetic Contact Dermatitis Following Patch Testing

Once adequate patch testing has been performed, management focuses on avoidance of the relevant allergens. There are two useful online resources to assist patients in finding alternative products that are free of their allergens. The author prefers the Contact Allergen Management Program (CAMP) that was developed and is managed by the American Contact Dermatitis Society (ACDS). SkinSafe is another online resource that is fundamentally similar to the CAMP program. There are no comparative studies that suggest one resource is better than the other.

Table 2 Author's approach empiric management of suspected cosmetic contact dermatitis

1. Provide short-term symptomatic relief while waiting to see if the patient clears with empiric allergen avoidance:
 - a. Appropriate potency, low allergenicity potential topical steroid used bid M-F $\times$ 8 weeks for mild-to-moderate, localized dermatitis
 - i. Triamcinolone 0.025% ointment for face or intertriginous areas
 - ii. Triamcinolone 0.1% ointment for other areas
 - iii. Desoximetasone ointment
 - b. Systemic steroid for moderate-to-severe, widespread dermatitis
 - i. 0.5–1.0 mg/kg intramuscular triamcinolone, may be repeated 4 weeks after initial dose
 1. Patch testing should not be performed for at least 28 days after the most recent injection
 - ii. Oral prednisone taper: 40 mg qd $\times$ 2 days, 20 mg qd $\times$ 2 days, then 10 mg qod $\times$ 30 days
 1. Patch testing can be performed anytime after the first 2 days of 40 mg/day. (Although there is some data that patch testing patients taking 20 mg or less of prednisone a day gave relevant positive patch test results, it is ideal that patch testing is done when patient is not on any systemic steroid that may block mild reactivity)
2. Use only low allergenicity potential cosmetic products
 - a. Regimen should be followed for at least 8 weeks or until adequate patch testing is performed
 - b. Products should be:
 - i. Widely available in common retail outlets and comparably priced to typical products
 - ii. Free of fragrance related allergens, formaldehyde-related preservatives, isothiazolinones, iodopropynyl butylcarbamate, propylene glycol related allergens, lanolin-related allergens, *p*-phenylenediamine, acrylates, toluene-sulfonamide formaldehyde-related allergens, chlorhexidine, chloroxylenol, and chemical sunscreens.
 - c. A list of the products typically recommended by the author:
 - i. Dermarest Psoriasis™ 2-in-1 shampoo and conditioner
 - ii. Dove™ sensitive skin unscented bar
 - iii. CeraVe™ cream
 - iv. Almay™ fragrance-free gel antiperspirant
 - v. Seventh Generation™ free clear wipes
 - vi. Zoya™ nail polish
 - vii. Suave™ unscented max hold nonaerosol hair spray
 - viii. Avoid hair dye. If unwilling to do so, use Wella Koleston™ perfect innosense
 - ix. If the face is involved, makeup should be avoided, if the face is not involved, usual makeup can be worn
 - d. Notably, the shampoo and soap listed above do contain cocamidopropyl betaine-related allergens. To the author's knowledge, there are no fragrance, preservative, and betaine-free soaps or shampoos that are widely available at typical stores.
3. If ONLY the above products are used for 8 weeks and the dermatitis does not substantially improve over that time period so that topical or systemic steroids can be completely or at least nearly completely discontinued, the probability of cosmetic contact dermatitis is quite low.

Substantial improvement usually begins in the first 2–4 weeks after allergen avoidance is initiated, although the skin may have increased sensitivity to irritants for up to 6 months after the symptomatic dermatitis has resolved. During the period while waiting for avoidance to become effective, topical steroids should be used intermittently to control pruritus and visible manifestations of dermatitis. The potency of steroid should be selected to be appropriate to the area being treated, with the eyelids, face, and groin best treated with low to medium potency steroids, the trunk and extremities with medium potency steroids, and the hands being treated with high potency steroids. There is no reliable data to guide more precise recommendations regarding potency or frequency of application, although it is generally accepted that continuous application of topical steroids should be avoided. The author generally recommends application once daily Monday to Friday with a break from therapy over the weekend.

Conclusion

Allergic contact dermatitis from cosmetics is common. The most commonly affected areas are the face and hands, although the neck, anogenital region, and the rest of the cutaneous surface can be affected depending on the causative product. The distribution of the eruption should allow the astute clinician to empirically identify likely causes prior to patch testing, but the gold standard for diagnosis and management is comprehensive patch testing. Prior to patch testing, there are low allergenicity products that can be recommended and after patch testing, there are helpful online resources that can provide more specific recommendations for patients.

Compliance with Ethical Standards

Conflict of Interest The author has served as a consultant for numerous personal care product and pharmaceutical companies which are listed in the following table.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Matthew J Zirwas commercial relationships, updated Jan 2018.

Company	Product	Condition	Role	Recipient
Regeneron/Sanofi	Dupixent	Atopic dermatitis	Speaker, consultant, investigator	Self
Fit Bit	Fitbit	Fitness/activity tracker	Consultant	Self
Genenich/Novartis	Xolair	Chronic urticaria	Speaker	Self
L'Oreal	CeraVe	Xerosis, dermatitis	Consultant	Self
Menlo	Serlopitant	Pruritus	Consultant	Self
AsepticMD	AsepticMD	Acne, keratosis pilaris	Part owner	Self
Leo	Tralokinumab	Atopic Dermatitis	Investigator	Employer
Janssen	Guselkumab	Psoriasis	Investigator	Employer
Incyte	Baricitinib	Atopic Dermatitis	Investigator	Employer
Foamix	Minocycline	Rosacea, Acne	Investigator	Employer
DS Biopharma	DS107	Atopic Dermatitis	Investigator	Employer
UCB	Bimekizumab	Psoriasis	Investigator	Employer

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