

Two Cases of Compositae Dermatitis Exacerbated by Moisturizer Containing Feverfew

Christina E. Killoran, Glen H. Crawford, and Anita Pedvis-Leftick

A 45-year-old woman presented in October 2005 with a history of an eruption involving her scalp and face, including her eyelids and behind her ears. The eruption began at the end of August. It flared after she used a calming moisturizer containing feverfew (*Tanacetum parthenium*). A second patient, a 25-year-old woman, presented complaining of a 1-month history of an eruption around the eyes that started after she began using a moisturizer containing feverfew. Both patients were patch-tested with the North American Contact Dermatitis Group series, cosmetic and plant series, and their own skin care products. Patient 1 had a + reaction to sesquiterpene lactone mix, a + reaction to Compositae mix, a + reaction to parthenolide, a + reaction to *Tanacetum vulgare*, and a + reaction to the calming moisturizer. Patient 2 had + reactions to sesquiterpene lactone, Compositae mix, and the same calming moisturizer. It is thought that both of these eruptions are a result of contact dermatitis from the Compositae plant family.

Case 1

A 45-year-old woman with a past medical history of Ehlers-Danlos syndrome and hypertension presented to our department in October 2005, complaining of an eruption (since the previous August) on her scalp that spread to her cheeks and eyelids. She had been using TobraDex on her eyelids with relief and ketoconazole shampoo on her scalp with partial relief. Further history revealed that her eruption was exacerbated after the use of a calming moisturizer containing feverfew for 2 weeks in September. The patient reported a worsening of her dermatitis with the use of the moisturizer but did not report burning.

Physical examination revealed erythematous scaly plaques throughout the scalp; on the forehead, cheeks, chin, and neck; and behind the ears. The periorbital area and the anterior surface of the neck were not spared (Fig 1).

The patient was patch-tested with the North American Contact Dermatitis Group standard series; a cosmetic and plant series; her own products, including the calming moisturizer; and a moisturizer, made by the same company, with a very similar chemical composition but without feverfew. Allergens were applied to the patient's

back with Chemotechnique's IQ Ultra closed cell patch-test chambers (Vellinge, Sweden) and removed after 48 hours. An initial reading was done at 48 hours when the allergens were removed. A final reading was done at 110 hours.

The patient had + reactions to sesquiterpene lactone mix 0.1% in petrolatum (pet) (Fig 2), Compositae mix 5.0% pet (Fig 3), *Achillea millefolium* (yarrow) 1.0% pet, parthenolide 0.1% pet (Fig 4), *Tanacetum vulgare* (tansy) 1.0% pet, and the calming moisturizer with feverfew (tested neat) (Fig 5). She had negative reactions to all other tested allergens, including the similar moisturizer not containing feverfew.

The eruption now is almost completely resolved. She was advised to refrain from gardening and grass cutting, not have flowers in the home, and avoid skin care products containing plant extracts. She is now using hypoallergenic skin care products and Desonide cream as needed to her face and neck.

Case 2

A 25-year-old woman presented with a 1-month history of intense pruritus, redness, and swelling in the periorbital areas. She reported having started using a new "eye cream" containing feverfew a few weeks before her symptoms began. Physical examination revealed eczematous weeping areas and edema on the upper and lower eyelids bilaterally, with extension onto the cheeks.

The patient was tested with the North American Contact Dermatitis Group standard series, selected cos-

From the Department of Dermatology and Skin Surgery, Roger Williams Hospital, Providence, RI, and the Department of Dermatology, University of Pennsylvania, Philadelphia, PA.

Address reprint requests to Anita Pedvis-Leftick, MD, Department of Dermatology and Skin Surgery, Roger Williams Hospital, Elmhurst Building, Providence, RI 02908. E-mail: leftick@cox.net.

DOI 10.2310/6620.2007.06063



Figure 1. Patient 1, 2 months after presentation with erythematous plaques visible on the forehead, cheeks, chin, and neck.



Figure 2. Patch-test results for patient 1: + reaction to sesquiterpene lactone.



Figure 3. Patch-test results for patient 1: + reaction to Compositae mix.

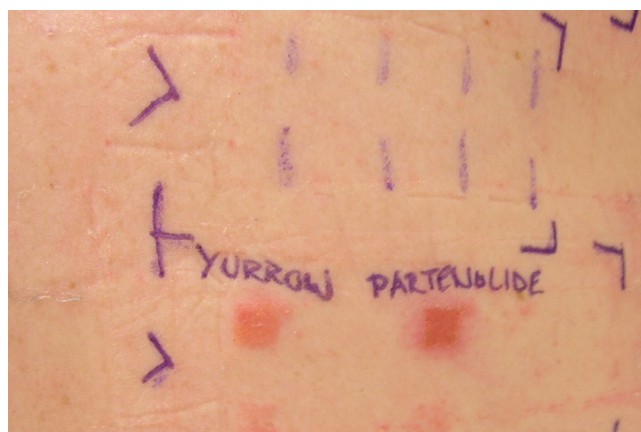


Figure 4. Patch-test results for patient 1: + reaction to *Achillea millefolium* and parthenolide.

metic allergens, and her personal products, including the implicated feverfew-containing moisturizer. At her initial (48 hour) and late (96 hour) patch-test readings, she demonstrated + reactions to the following chemicals: compositae mix 6% pet, sesquiterpene lactone mix 1% pet (Fig 6), and the feverfew-containing moisturizer (tested neat) (Fig 7). The patient was not tested with parthenolide or *Tanacetum vulgare*.

The patient was advised on the patch-test results, avoidance measures, and appropriate skin hygiene practices. She was also given a 7-day topical regimen consisting of triamcinolone 0.1% ointment. Shortly thereafter, her symptoms completely resolved. She was seen in follow-up at 6 weeks without recurrence of symptoms.



Figure 5. Patch-test results for patient 1: + reaction to *Tanacetum vulgare* and feverfew moisturizer.

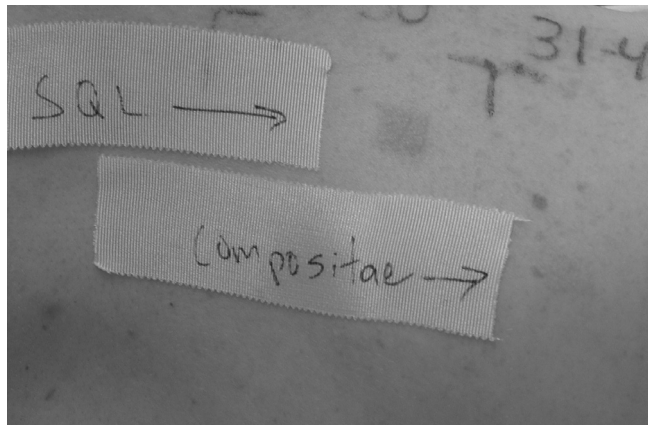


Figure 6. Patch-test results for patient 2: + reaction to compositae mix and sesquiterpene lactone.

Discussion

The Asteraceae (Compositae) or daisy plant family is one of the largest, comprising about 20,000 species,¹⁻³ and is a common cause of contact dermatitis.^{2,4} The Compositae plant family is the third most common cause of botanical dermatitis, after the toxicodendron plant family and tea tree oil.^{5,6} Over 200 species of the Compositae family cause significant contact dermatitis. Sesquiterpene lactones (SLs) are the allergens found in Compositae species and are found throughout the plant in the leaves, stems, and flowers.^{2-4,7,8} Individual SLs must contain an α -methylene-butyrolactone moiety to be antigenic.^{2,9} SLs may become airborne when parts of the plants dry and become pulverized.² More than 3,000 different SLs have been identified, and greater than 100 have been identified as allergens.^{3,8} An SL mix of alantolactone, dehydrocostus lactone, and costunolide 0.1% pet is used for patch-testing

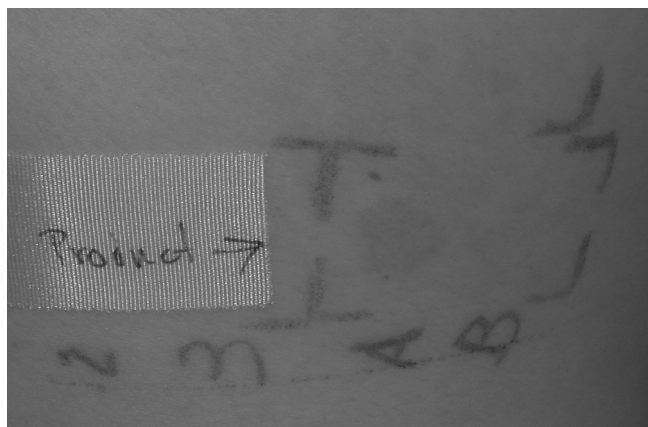


Figure 7. Patch-test results for patient 2: + reaction to feverfew moisturizer.

with plants of the Compositae family.³ SL mix is specific but not always sensitive for detecting allergy to Compositae plants. Compositae mix is made up of short ether extracts of five Compositae plants: arnica, German chamomile, yarrow, tansy, and feverfew flower extract.¹⁰ A recent study of patients suspected to have contact allergy to botanical agents found that while Compositae mix detected all relevant positive reactions to members of the Compositae plant family, SL mix detected only approximately 3 of 9 relevant positive reactions to Compositae plants.¹¹ These results are consistent with those of numerous previous studies comparing Compositae mix and SL mix as screening agents for Compositae plant allergy.^{10,12} Extract of feverfew is the single component of Compositae mix that most frequently produces positive patch-test reactions in European patients who react to Compositae mix.⁵

Allergic contact dermatitis due to Compositae species usually presents in an airborne pattern with a chronic, diffuse, and erythematous lichenified eruption of exposed skin.^{1,3,4,8} Involvement of the eyelids and postauricular and submental areas distinguish it from a photodermatitis, with which it is commonly confused.^{3,7} Airborne contact dermatitis due to Compositae classically presents as a recurrent acute dermatitis in the summer months that with repeated exposure over time progresses to a more chronic lichenified acral dermatitis.^{2,13} It is usually seen in men who are older than 40 years and who frequently work outdoors in rural areas.¹ Younger patients may have a similar pattern at presentation if they have had occupational exposure.¹⁴ Different presentations of Compositae allergy have been reported, ranging from a mild hand dermatitis to a vesicular hand dermatitis to a more widespread or generalized dermatitis¹⁴ and prurigo nodularis-like lesions.¹⁵ Some authors have reported cases of *Parthenium hysterophorus* allergy that resembles a photodermatitis with sparing of the eyelids and retroauricular and submental areas, suggesting a possible link between Compositae allergy and photosensitivity. Florists, horticultural workers, and gardeners may also present with a hand dermatitis.³ With the recent increase in the use of botanical extracts including feverfew in cosmetic formulations, cosmetics may become another important route of sensitization with a distinct pattern of dermatitis.

Two common plants in the Compositae family known as feverfew produce an allergic contact dermatitis.^{3,4,8} *Tanacetum parthenium* is common feverfew, found widely in temperate areas of the United States. *Tanacetum parthenium* has been used historically as a medicinal plant to treat fever, headache, and gynecologic and obstetric

conditions. It has been shown to have an effect in preventing migraines.⁵ Oral ingestion of feverfew leaves may produce inflammation of mucous membranes of the mouth and tongue, which may represent an allergic contact stomatitis.⁵ *Parthenium hysterophorus*, also called wild feverfew or Santa Maria feverfew, is found primarily in southern regions in the United States.^{4,8} *Parthenium hysterophorus* was accidentally introduced to India from America with imported grains and has become the most common cause of contact dermatitis in India due to plants.^{1-4,13,16-18} The allergen in feverfew species and *Tanacetum vulgare* (tansy) is the SL parthenolide, which is present in the plant parts and in the pollen.^{2,4} The highest concentrations of SLs are found in the trichomes present over the leaves and capitulum of the plant.¹⁶ Some studies have suggested that monoterpenes may be released as well as SLs. It has been suggested that monoterpenes may play a role in airborne dermatitis from Compositae plants and possibly in nasobronchial allergy.^{16,19} There may be more than one allergenic component influencing contact dermatitis from feverfew or from plants of the Compositae family.^{9,16}

The most important aspect of treatment is to remove exposure to the plant, which is difficult because of how common these plants are.² Topical steroids have minimal effect unless the exposure is removed. Systemic steroids are effective, but long-term treatment is impractical, and rebound is frequent following discontinuation of the treatment. Azathioprine and psoralen plus ultraviolet A have been used for seasonal flares.² Studies have shown long-term remission with treatment with azathioprine.¹⁸ Desensitization has been tried but has had mixed results.¹⁸

We present two cases of contact allergy to feverfew. The first case is a patient with a seasonal eruption consistent with an allergic airborne dermatitis. We thought the scalp eruption was caused by an underlying seborrheic dermatitis exacerbated by the Compositae allergy. Patch testing revealed sensitivity to the Compositae plant family, SL mix, yarrow, tansy, and parthenolide. The patient's eruption was exacerbated by the use of a calming moisturizer containing feverfew. The allergy in the second case was likely induced by the same feverfew containing moisturizer. The typical pattern of Compositae allergy is a seasonal airborne contact dermatitis. Another frequent pattern of Compositae dermatitis is hand dermatitis in patients who handle plants, such as florists or gardeners. To our knowledge, there have been no other reported cases of Compositae allergic contact dermatitis due to moisturizer containing feverfew.

The use of plant extracts in cosmetic preparations is becoming increasingly popular. Clinicians should be aware of this trend and consider these cosmetics as potential sensitizers in patients presenting with contact allergy.

References

1. Crounse RG. Plant dermatitis due to the Compositae (Asteraceae) family. *J Am Acad Dermatol* 1980;2:417-24.
2. Gordon LA. Compositae dermatitis. *Australas J Dermatol* 1999;40:123-30.
3. Marks JG Jr, Elsner P, DeLeo VA. Standard allergens and plants. In: Fathman L, editor. *Contact and occupational dermatology*. 3rd ed. Philadelphia: Mosby; 2002. p. 132-3, 269-71, 283-5.
4. Dermatoses due to plants. In: Bologna JL, Jorizzo L, Rapini RP, editors. *Dermatology*. New York: Lippincott Williams & Wilkins; 2003. p. 176-80.
5. Paulsen E. Contact sensitization from Compositae-containing herbal remedies and cosmetics. *Contact Dermatitis* 2002;47:189-98.
6. Crawford GH, Sciacca JR, James WD. Tea tree oil: cutaneous effects of the extracted oil of *Melaleuca alternifolia*. *Dermatitis* 2004;15:59-66.
7. Goulden V, Wilkinson SM. Patch testing for Compositae allergy. *Br J Dermatol* 1998;138:1018-21.
8. Allergic sensitization to plants, and specific instructions for patients with common contact allergens. In: Rietschel RL, Fowler JF, editors. *Fisher's contact dermatitis*, 3rd ed. New York: Lippincott Williams & Wilkins; 2001. p. 351-96, 723-34.
9. Lamminpää A, Estlander T, Jolanki R, et al. Occupational allergic contact dermatitis caused by decorative plants. *Contact Dermatitis* 1996;34:330-5.
10. Paulsen E, Andersen KE. Colophonium and Compositae mix as markers of fragrance allergy: cross-reactivity between fragrance terpenes, colophonium and Compositae plant extracts. *Contact Dermatitis* 2005;53:285-91.
11. Simpson EL, Law SV, Storrs FJ. Prevalence of botanical extract allergy in patients with contact dermatitis. *Dermatitis* 2004;15:67-71.
12. Bong JL, English JS, Wilkinson SM. Diluted Compositae mix versus sesquiterpene lactone mix as a screening agent for Compositae dermatitis: a multicentre study. *Contact Dermatitis* 2001;45:26-8.
13. Sharma VK, Sethuraman G, Bhat R. Evolution of clinical pattern of *Parthenium* dermatitis: a study of 74 cases. *Contact Dermatitis* 2005;53:84-8.
14. Paulsen E, Andersen KE. Compositae dermatitis in a Danish dermatology department in 1 year (II). Clinical features in patients with Compositae contact allergy. *Contact Dermatitis* 1993;29:195-201.
15. Sharma VK, Sahoo B. Prurigo-nodularis-like lesion in *Parthenium* dermatitis. *Contact Dermatitis* 2000;42:235-48.
16. Mahajan VK, Sharma NL, Sharma RC. *Parthenium* dermatitis: is it a systemic contact dermatitis or an airborne contact dermatitis. *Contact Dermatitis* 2004;51:231-4.
17. Sharma VK. Patch testing with the European standard series and Compositae extracts in patients with airborne contact dermatitis. *Contact Dermatitis* 2001;44:49-50.

-
18. Verma KK, Manchanda Y, Paricha JS. Azathioprine as a corticosteroid sparing agent for the treatment of dermatitis caused by the weed *Parthenium*. *Acta Derm Venereol* 2000;80:31–2.
 19. Paulsen E, Christesen LP, Andersen KE. Do monoterpenes released from feverfew (*Tanacetum parthenium*) plants cause airborne Compositae dermatitis? *Contact Dermatitis* 2002;47:14–8.