

Clinical patterns of Compositae dermatitis in Danish monosensitized patients

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Summary

Background. Compositae dermatitis was originally described as airborne contact dermatitis. More recent studies have reported a wider clinical spectrum, but often in polysensitized patients.

Objective. To evaluate the clinical features of patients sensitized to Compositae only.

Patients/Methods. Consecutive Compositae-sensitive eczema patients, tested between 1990 and 2015, who, at the patch testing session diagnosing their Compositae allergy, were found to be sensitized only to the plant family, were included.

Results. Altogether, 529 of 13 139 patients tested (4.0%) were sensitized to Compositae, and 95 (18% of these) were monosensitized. The majority had hand eczema, and 39 (44%) had a vesicular volar pattern. Eighty-one patients were classified into one of three groups of similar size: localized eczema, eczema of exposed skin, and localized eczema turning into widespread eczema.

Conclusions. The prevalence of Compositae sensitization is continuously high in consecutive eczema patients. Sensitization may occur at any age. Clinical features in monosensitized patients vary, but, with continuing exposure, the patients may develop more widespread dermatitis similar to classic Compositae dermatitis. Avoidance may clear the exogenous part, but not endogenous aetiological factors such as vesicular hand eczema or possible photosensitivity. Thorough clinical assessment and patient education are important in reducing the impact of Compositae contact allergy.

Key words: allergic contact dermatitis; Asteraceae; clinical patterns; Compositae; Compositae mix; hand eczema; patch test: sesquiterpene lactone mix.

The daisy or sunflower family (Asteraceae, Compositae) is one of the largest flowering plant families in the world. The botanical family name Asteraceae refers to the star-like

(aster = star in Greek) configuration of the flowers in many species of this family, such as aster (*Aster* species), daisy (*Bellis perennis* L.), marguerite (*Leucanthemum vulgare* Lam.), and sunflower (*Helianthus annuus* L.). The daisy family is currently considered to be the most frequent cause of allergic contact dermatitis attributable to plants in Europe.

The term 'Compositae dermatitis' is often used as a synonym for the airborne pattern of Compositae eczema, originally known as weed or ragweed dermatitis in the 1930s in the United States (1). However, more recent American and European studies have pointed out a

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wider clinical spectrum in Compositae-sensitive patients, ranging from localized eczema of the hands or face to widespread dermatitis (2–6). This may reflect both changing and different sources of exposure, depending on climatic conditions, but also the influence of a coexisting photosensitivity or contact allergy to other substances (3).

Concomitant sensitization to other contact allergens among patients with Compositae contact allergy seems to be frequent (3, 7, 8). Furthermore, some of these studies and more recent reports have described a high prevalence of polysensitized patients, that is, patients with three or more contact allergies, among Compositae-allergic patients, and, conversely, the sesquiterpene lactone (SL) mix is among the seven allergens most frequently and significantly associated with polysensitization (8–10). Thus, the clinical features of patients with Compositae sensitization may reflect contact with a whole array of contact allergens rather than plant allergens. Apparently, previous clinical studies or classifications have not considered this aspect, but have included all patients diagnosed with Compositae allergy (3, 5, 8, 11, 12).

The aim of this study was to evaluate the clinical features of patients sensitized to Compositae allergens only, to obtain more precise knowledge of the patterns of true Compositae dermatitis.

Patients and Methods

The study included consecutive Compositae-sensitive eczema patients, tested between February 1990 and December 2015, who, at the patch testing session diagnosing their Compositae allergy, were monosensitized to the plant family. Any previous or subsequent patch test results were disregarded. Compositae sensitization was defined as an at least + positive patch test reaction to an SL allergen and/or Compositae plant extract/oleoresin and/or a Compositae plant 'as is' on day (D) 3 or later.

The SL mix 0.1% pet. (Trolab®, Hermal, Reinbek, Germany; and Chemotechnique Diagnostics, Vellinge, Sweden) was included in the baseline series in February 1990, and the SL parthenolide 0.1% pet. (Chemotechnique Diagnostics) was added in January 1995. Furthermore, the Compositae mix 6% pet. (Trolab®) was used as a screening mix in the baseline series from October 1998 to March 2001. This mix and Compositae mix 5% pet. (Chemotechnique), and other Compositae allergens and extracts, were additionally used in aimed patch testing, either because of positive reactions to any of the screening agents, or because of suspected Compositae sensitization. Finally, Compositae mix II 2.5% pet. (Chemotechnique) was included in

the baseline series from January 2015. The patch test materials were applied to the back for 2 days, with Finn Chambers® (Epitest, Helsinki, Finland) on Scanpor® tape (Norgesplaster, Oslo, Norway), or Finn Chambers® on Scanpor® tape (SmartPractice®, Phoenix, AZ, USA). Readings were recorded on day (D) 3/4 and usually also on D7, according to the current recommendations (13).

The clinical features were recorded as reported in the clinical records of the Compositae patients. In a previous study on the clinical features of Compositae dermatitis in Denmark, most of the patients could be classified into one of four groups: (i) localized eczema, (ii) eczema of exposed skin, (iii) localized eczema turning into widespread dermatitis, and (iv) eczema with seasonal variation, typically with summer exacerbation, from the beginning (6). All patients in the last-mentioned group had vesicular eczema of the palms and possibly soles, and this type of eczema often flares in hot summer weather. Furthermore, summer exacerbation was often reported among patients in groups 2 and 3, so seasonal variation could be considered to be a common feature in most Compositae patients, either because of the plants' growing season, or because of a special type of eczema. In the present study, it was decided to classify all Compositae patients into one of the first three groups, and to make separate analyses of patients with vesicular eczema of the palms/soles and patients without this particular type of eczema.

To assess the natural history of Compositae dermatitis, the clinical characteristics of selected patients with different courses in the outpatient clinic were evaluated. In accordance with a previous study from this department, atopy was defined as current or past atopic dermatitis/hay fever/asthma and/or a positive prick test reaction to a standard inhalant allergen (9). Occupational sensitization/dermatitis referred to current, past, partly or possible work-related cases.

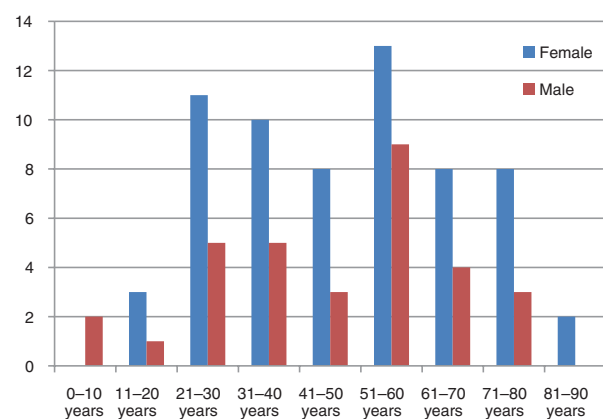
Results

Altogether, 13 139 patients were tested with the SL mix in the 26-year period, and 529 (4%) were diagnosed with Compositae contact sensitization (Table 1). When the periods 2002–2008 and 2009–2015 were compared, the prevalence of Compositae sensitization was significantly lower in the latter period ($p < 0.05$).

The 529 Compositae-sensitive patients comprised 399 females (75%) and 130 males (25%), as compared with an overall percentage of females tested from 1990 to 2015 of 64%. The majority of Compositae-allergic patients were sensitized to other allergens in addition to Compositae: 107 patients (20%) were sensitized to one other allergen,

Table 1. Prevalence of Compositae-sensitive patients based on patch test screening with sesquiterpene lactone mix 0.1% pet. (1990) and parthenolide 0.1% pet. (1995) supplemented with Compositae mixes, allergens, and extracts

	Patients positive/tested	% Positive
February 1990 to February 1998	190/4386	4.3
February 1998 to December 1998	11/426	2.6
1999	24/444	5.4
2000	34/483	7.0
2001	25/506	4.9
2002	27/504	5.4
2003	20/530	3.8
2004	27/402	6.7
2005	21/501	4.2
2006	27/443	6.1
2007	21/467	4.5
2008	20/443	4.5
2009	15/518	2.9
2010	13/458	2.8
2011	10/489	2.0
2012	11/498	2.2
2013	6/563	1.1
2014	12/536	2.2
2015	15/542	2.8
Total number of patients	529/13,139	4.0

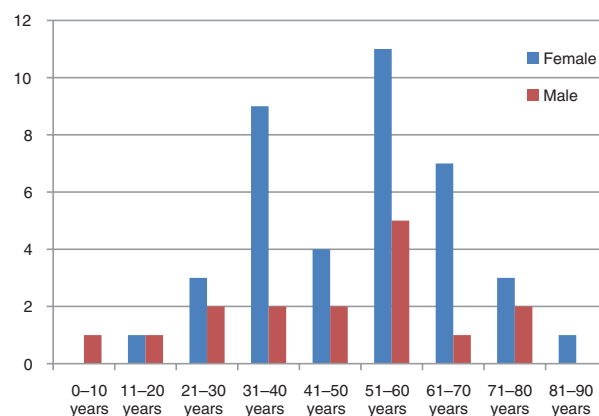
**Fig. 1.** Sex and age distribution among 95 patients sensitized to Compositae allergens only.

93 patients (18%) were sensitized to two other allergens, 232 patients (44%) were sensitized to three or more allergens, and only 95 patients (18%) were monosensitized to this plant family. They included 63 females with a mean age of 49 years, and 32 males with a mean age of 46 years (Fig. 1). The distribution of sex, occupational Compositae exposure and atopy in the monosensitized patients as compared with the remainder of the Compositae-allergic patients is shown in Table 2.

Table 2. Distribution of sex, occupational exposure to Compositae plants and atopy among 529 Compositae-allergic patients tested between 1990 and 2015

	Females, n (%)	Males, n (%)	Occupational dermatitis, n (%)	Atopy
All patients	399 (75)	130 (25)	118 (22)	191 (36)
Monosensitized	63 (66)	32 (34)	29 (31)	27 (28)
Polysensitized ^a	336 (77)	98 (23)	89 (21)	164 (38)

^aPatients with at least one other contact allergy in addition to Compositae allergy.

**Fig. 2.** Distribution of positive reactions to sesquiterpene lactone mix in different age groups in 95 Compositae-sensitive patients.

All 95 patients were tested with the SL mix, and 55 (58%) had positive reactions, whereas 83 of the 93 patients (89%) tested with Compositae mix 6% and/or 5% pet. had positive reactions. Among the 93 patients tested with both SL and Compositae mix(es), 50 (54%) had positive reactions to both, and 37 (40%) had positive reactions to either one or the other, meaning that only 6 patients (6%) were not identified by any of the screening mixes. These had positive reactions to extracts of dandelion (*Taraxacum officinale*) (2 patients), tansy (*Tanacetum vulgare* L.) and yarrow (*Achillea millefolium*) (1 patient), marguerite daisy (*Argyranthemum frutescens*) (1 patient), arnica (*Arnica montana* L.) (1 patient), and Spanish marguerite (*Osteospermum ecklonis*) 'as is' (1 patient). The distribution of positive reactions to SL mix across age is shown in Fig. 2. The relevance of the Compositae allergy was considered to be current or old in 84 patients (88%) and unknown in 11 (12%).

The majority of the 95 patients, that is, 89 patients (94%), had hand eczema. Twenty-four were diagnosed with vesicular hand eczema ('pompholyx'), and another 15 were reported to have volar vesicular hand eczema.

The last-mentioned were also included in the group of 39 patients (44%) with vesicular eczema of the hands. The remaining 56 patients, with another type of (hand) eczema, were classified as follows.

Classification of patients with eczema other than vesicular hand eczema

Group 1 included 14 patients with mainly localized eczema of the hands or wrists (12 patients) and face (2 patients) (Table 3). Half of the patients, that is, 7 patients, had certain, possible, previous or partly occupational Compositae sensitization, and the mean age in this group was 29 years, and thus slightly lower than in the rest of group 1 (34.5 years).

Group 2 comprised 23 patients with the classical pattern of plant dermatitis, that is, eczema of exposed skin of the hands, arms, face, neck etc. that comes into contact with airborne plant particles or plant material released during the handling of plants (Table 3). The highest percentage of work-related sensitization was found in this group, which basically consisted of 13 young patients with occupational exposure and a mean age of 29 years, and 10 middle-aged/elderly patients with recreational exposure and a mean age of 67 years. Nine of the 10 elderly patients had or had had a garden, and the other patient was probably sensitized by tending the flowering plants of her window boxes. One male was diagnosed with ultraviolet (UV) B sensitivity. A typical pattern in gardeners handling the same species in large quantities was involvement of the dorsal aspects of the hands and volar sides of the forearms, with possible spread to the face or neck.

Group 3 included 6 females, 2 occupationally exposed with a mean age of 51.5 years, and 4 non-occupationally exposed with a mean age of 54 years (Table 3). Most of the patients in this group had hand eczema, which was followed – after months or years – by more widespread dermatitis. In 1 patient, the primary eczema was periorbital, and was followed by involvement of the hands/feet in the next year.

Classification of patients with vesicular hand eczema

The 39 patients with vesicular eczema of the hands/feet were classified into similar groups.

Group 1 comprised 14 patients (Table 3). Only 4 were exposed occupationally, and, as in the other groups, their mean age of 42 years was lower than that of the 10 other patients in the group (54.5 years). In 2 elderly women, the vesicular hand eczema appeared in spring and disappeared in autumn or winter. Three of the 4 patients with

occupational sensitization were atopic; they had worked as a chef, a kitchen assistant, and a café manager.

Group 2 included 2 males, who were both keen amateur gardeners, with summer-exacerbated eczema in recent years, which was most widespread in the eldest male, who was aged 74 years (Table 3).

Group 3 was the largest in this subset of patients, including 22 patients. Only 2 were occupationally exposed, and another 3 were atopic (Table 3). The mean age of the non-occupationally exposed patients was 57 years, and was higher than that of the occupationally exposed patients, which was 46.5 years. More than half of the patients had had hand eczema for at least a decade, either chronically or periodically, and the dissemination might have been gradually progressing year by year, or have begun abruptly and become widespread, often in relation to, or exacerbated by, summer. On the other hand, only 3 patients had had hand eczema for ≤ 2 years. The varying disease courses were well shown in 2 females with a 2-year duration of hand eczema: 1 had exacerbation of the hand eczema and facial involvement in summer, and the other had involvement of the forearms, collar, waistband, legs and feet during one autumn.

Other patients

Fourteen patients did not fit into any of the above-mentioned groups. They comprised 6 females and 8 males, and the mean age was 50 years. In 7 patients, the relevance of the weak positive (+) patch test reactions to Compositae mix and/or another Compositae extract was unknown. Four of these 7 were tested with Compositae mix 6% pet. when it was part of the baseline series. Seven patients were atopic, including 5 with atopic dermatitis, and other diagnoses were nummular eczema (2 patients), widespread dermatitis (2 patients), perianal itch (1 patient), and seborrheic dermatitis or drug eruption (1 patient). Another 3 patients, whose sensitization was considered to be relevant, had widespread dermatitis from the first season, including 1 who was possibly occupationally sensitized, and thus constituted a very small group on their own. One of these patients was diagnosed with UVB sensitivity 5 years after the initial diagnosis of Compositae allergy.

Course of the disease

Group 1 with localized eczema included a boy of 7 years (case 1), who, at age 5 years, developed eczema of the palms in early summer. The eczema recurred 2 years later in May–June, and his mother suspected picking of dandelions as the cause of the hand eczema. This was verified by

Table 3. Distribution of 95 Compositae-sensitive patients in three clinical groups with numbers (percentages) of occupational Compositae sensitization/dermatitis and atopy in each group

	Group 1 (localized eczema)	Group 2 (eczema of exposed skin)	Group 3 (localized to widespread eczema)	Other patients
Patients without vesicular hand eczema	14 7 OD (50) 5 atopy (38%)	23 13 OD (56) 5 atopy (21%)	6 2 OD (33%) 2 atopy (33%)	13 1 OD 6 atopy (46%)
Patients with vesicular hand eczema	14 4 OD (28) 5 atopy (38%)	2 0 OD 0 atopy	22 2 OD (9) 3 atopy 14%)	1 0 OD 1 atopy
<i>All patients</i>	28 (29.5)	25 (26)	28 (29.5)	14 (15)

OD, occupational dermatitis.

patch testing. In the group with vesicular hand eczema, a 70-year-old woman (case 2) had had summer-related hand eczema from June to autumn for 5–6 years. The eczema was mainly localized to the palms and – to a lesser degree – the lateral and dorsal aspects of her fingers. The eczema lasted longer the last season, and the patient ascribed this to the handling of marguerite daisies late in autumn. She was sensitized to plants cultivated in her large garden, such as feverfew (*Tanacetum parthenium*), elecampane or large yellow ox-eye daisy (*Inula helenium* *Telekia speciosa*), and marguerite daisy. Neither of these patients was referred again.

In group 2, with dermatitis of exposed skin, 2 gardeners illustrated the varying courses. Case 3 was a male gardener, aged 23 years, who, after breaking off chrysanthemum (*Chrysanthemum* cultivars) cuttings manually for > 1 year without using gloves, developed eczema of the fingertips, backs of the hands, volar aspect of the forearms, face, and neck. Patch testing confirmed sensitization to several chrysanthemum cultivars, and the eczema cleared when the contact was discontinued. On the other hand, case 4, a 48-year-old female gardener, developed eczema first on the face and on the hands, and later on the forearms and neck, after working with marguerite daisies and chrysanthemums 2–3 years previously. Although she discontinued working with Compositae plants, the eczema recurred every spring, and became widespread on exposed skin and long-lasting; she was only free of eczema from November to January. She never developed vesicular hand eczema.

In group 3, with localized eczema turning into widespread eczema, a 56-year-old woman (case 5) was referred with a 4–5-year history of keratotic and vesicular eczema of the palms and fingers. There had been no seasonal variation apart from flaring since March at the time of referral, and the patient was diagnosed with Compositae contact sensitization. She was referred again the following summer with flaring of eczema since May and involvement of the hands, forearms, neck, and

V of the neck. The next summer was even worse, with involvement of the hands, arms, face, and trunk, and the patient was treated with oral methotrexate. In the group with vesicular hand eczema, a 59-year-old male (case 6) developed vesicular eczema of the palms and lateral aspects of the fingers when he was propagating chrysanthemum plants from seeds 29 years previously. After that, he had had recurrent flares, always in summer, but not every summer. In the last 5 years, there had been involvement of both hands and feet (volar and plantar aspects as well as dorsal aspects), and for 2 years there had been summer-related flares of eczema on the trunk and neck. At referral, the patient had eczema of the hands, arms, feet, legs, trunk, and neck, and discrete erythema in the face. He was sensitized to garden plants, and, after removal of these, the eczema was gradually – over the course of 4 years – so well controlled that it could be treated with topical corticosteroids only.

Discussion

The prevalence of Compositae sensitization in consecutive eczema patients varied, but was generally high, in the 26-year period, with a peak of 7% during the time when Compositae mix 6% pet. was included in the baseline series. This is predictable, on the basis of the irritant and possibly sensitizing potential of the mix, and the weak positive (+) reactions of unknown relevance in the subset of patients who could not be classified into any of the three groups may, in fact, represent irritant reactions (14). The lower prevalence in the last 7 years may represent fluctuations in the referral pattern, as the prevalence in 2016 was 3.3%. Another possibility is that Compositae mix 5% pet., which has been used more in recent years, has a lower detection rate than Compositae mix 6% pet.

The 58% detection rate of the SL mix is lower than the 65% reported previously from the same area (9). However, it was appropriately supplemented with Compositae mix 6% and 5% pet., respectively, and, as 2 of the 6

patients with negative patch test results with both mixes were occupationally sensitized and thus unlikely to be missed, the addition of aimed testing with a dandelion extract raised the detection rate to 97%. It is well known that dandelion dermatitis is not picked up by the SL mix, and apparently this may also be the case with Compositae mix 6% pet., although probably more rarely (15, 16). Altogether, the mean prevalence of 4% is in accordance with the figure that von der Werth et al. expected in northern Europe (17).

The predominance of females is in accordance with a European multicentre study on SL mix-positive patients and two German studies on 118 and 313 Compositae mix 6% pet.-positive patients, respectively (18–20). The mean age is lower than found in some UK studies, which may be because of a higher percentage of younger occupationally sensitized patients in the present study (5, 16). Furthermore, the study by Ross et al. was based on SL mix positivity, which is more prevalent in adults than in very young persons (Fig. 2) (5).

The prevalence of atopy is lower in the monosensitized Compositae patients than among the remaining 434 patients with Compositae allergy (Table 2). However, the prevalence is similar to the one reported in a previous Danish study (11). It is not directly comparable with the prevalence of atopic dermatitis according to MOAHLFA figures from other centres, as it includes mucosal atopy as well as positive prick test reactions to standard inhalant allergens. Three of the 6 atopics in the group that could not be classified had a + reaction to Compositae mix 6% pet. of unknown relevance, and these reactions may represent irritant reactions. On the other hand, most of the atopics had relevant reactions, and it is important to be aware of the risk of Compositae sensitization in children and young adults who may have been sensitized in their childhood – examples of both were seen in this study (21, 22).

Although Mitchell, in his 1969 review on Compositae dermatitis, describes ragweed dermatitis as a chronic, atopic dermatitis-like, seasonal dermatitis that may become perennial, he also quotes older references reporting that weed dermatitis – ‘in rare cases’ – may be localized to the hands only (23, 24). Likewise, Roed-Petersen and Hjorth, in one of the first studies of Compositae dermatitis in Denmark, reported that 12 of 22 Compositae-sensitive patients had localized hand eczema, and Mitchell and Rook mentioned that hand eczema was another clinical pattern that especially occurred in patients handling chrysanthemum and salad plants (11, 25). The prevalence of localized eczema was reported to be as high as 75% in a study from the United States, possibly because of a change in exposure to sensitizing species

from ragweed in the 1950s to dog fennel in the 1980s (3). A similarly high prevalence was reported in 60 UK patients with Compositae contact allergy: 38 (63%) had primarily hand eczema, and 8 (13%) facial involvement (4). Other European studies have found a lower prevalence of localized eczema in these patients: Ducombs et al. reported 15 cases of hand eczema (35%) and 6 of facial dermatitis (14%) in 43 SL mix-positive patients with current relevance of the allergy, and these figures are similar to those of a British study of 135 SL mix-positive patients, in which Ross et al. saw 48 cases of hand eczema (36%) and 15 cases with facial involvement (11%) (5, 26). The prevalence of localized eczema was lower in the present study than in these previous studies, as patients with either hand eczema or facial dermatitis constituted 35% of the 81 patients who could be classified into groups (Table 3). The reason for this discrepancy might be – although this had not specifically been stated – that the two studies included consecutive SL mix-positive patients with possible multiple contact allergies, and not just monosensitized patients. This would account for a high number of patients with hand eczema. However, in another European multicentre study, the prevalence was as low as 12.5% among SL mix-positive patients with current relevance of the allergy (18).

Altogether, the two groups with localized eczema had the second highest prevalence of occupationally sensitized patients. Ross et al. also noticed that 8 of 15 patients with occupational Compositae sensitization had eczema localized to the hands, and that the small number of cases comprised mainly florists and agriculture workers, often females in their 40s or 50s (5). In contrast to this, the occupationally sensitized patients in group 1 were young gardeners and greenhouse workers. The young age is in accordance with that of other occupational dermatoses, and the heavy exposure (1 patient reported breaking off 12 000–13 000 cuttings of marguerite daisies per day), which is often limited to a few species, makes sensitization to these a risk, and, if not protected by gloves, the hands are primarily involved. Because of the limited sensitivity, the SL mix may not be a suitable screening agent, and this may account for the low prevalence of occupational Compositae allergy in the study by Ross et al. (5, 27). On the other hand, the present study with monosensitized patients will favour the selection of occupationally sensitized patients. This is in accordance with the fact that 29 of the monosensitized patients (31%) had work-related Compositae allergy, as compared with 89 (21%) of the remaining 434 Compositae-sensitive patients (Table 2).

Concerning the patients with localized vesicular hand eczema, the mean age of both occupationally and recreationally sensitized persons was higher than in

the other group with localized eczema. This may reflect the often long-lasting course of vesicular hand and foot eczema. However, it is interesting that 2 elderly women had summer-related vesicular hand eczema that mimicked constitutional eczema, but the disappearance in autumn/winter suggests volar contact dermatitis (case 2). As described above (case 2), 1 of the women was allergic to strongly sensitizing species. In a Swedish study on 17 SL mix-positive patients with other contact allergies as well, 16 patients had vesicular palmar eczema, and this pattern may thus occur in patients with no contact allergy, one contact allergy, or several contact allergies (28).

Group 2, which represented the classical Compositae dermatitis of exposed skin, was slightly smaller than the other two (Table 3). The prevalence of this pattern is similar to that reported by Ducombs et al. (28% face and hands) and Ross et al. (24% hands and face) (5, 26). As mentioned previously, the group comprised young persons who were occupationally sensitized – as gardeners, gardener apprentices, greenhouse workers, sandwich makers, kitchen workers, and forestry technician apprentices – and elderly persons sensitized mainly by gardening. The prolonged and intensive contact with plants in a humid greenhouse climate may facilitate sensitization, which typically involves the thin exposed skin on the backs of the hands and volar aspects of the forearms in the beginning. The dermatitis may progress to involve other areas of exposed skin, perhaps because of manual transfer of allergens, or because of airborne plant material being released during handling of the plants. Likewise, keen hobby gardeners may be heavily exposed, but to a large number of weeds and cultivated garden plants, and, in addition, to windborne plant particles. Both groups may – in theory – become multifocally sensitized, thus accounting for the clinical pattern. This is not usually accompanied by vesicular hand eczema, and only 2 male hobby gardeners presented this combination (Table 3). Watt, in a case series of 10 Australian patients with ragweed dermatitis, described involvement of the face, exposed areas of the neck and forearms in most patients, but 2 had widespread dermatitis and also hand eczema ‘suggestive of a pompholyx reaction’ (29).

Altogether, group 3, comprising patients with localized eczema turning into widespread eczema, was as large as group 1 (localized eczema), but with relatively few occupationally sensitized patients (Table 3). The majority of the patients had had hand eczema for a few years (those without vesicular hand eczema) or decades (those with vesicular hand eczema) before dissemination. In a previous Danish study, in which this group was the largest, two possible explanations were offered: either the Compositae

sensitization was secondary to long-standing skin disease, or it occurred in individuals with enhanced susceptibility to contact allergy, as most of the patient were sensitized to other allergens (6). As we can disregard the latter explanation in the present study, it is most likely that the disrupted skin barrier in long-standing constitutional eczema paves the way for secondary Compositae sensitization. Although these patients develop widespread summer-related dermatitis, they do so at a younger age than the elderly recreationally sensitized patients with an exposed skin pattern in group 2. Both the focal sensitization through the volar skin and the possible multifocal sensitization in the elderly patients may play a role in the clinical presentation. Few patients were tested for UVA/UVB sensitivity, and we do not know the contribution of photosensitivity to the clinical features in the present study, but the generalized and photo-distributed eczema in middle-aged and elderly patients with Compositae allergy may have different pathogeneses (30).

Concerning the course of the disease, it is evident from the patients with occupational exposure that avoidance of plant contact clears the skin (case 3). It is also evident – from the same group of patients – that the localized eczema may spread to involve exposed skin areas, and furthermore into summer-related or almost perennial dermatitis (case 4). Guin described five patterns of Compositae dermatitis: pseudophotodermatitis (corresponding to classical Compositae dermatitis), atopic eczema-like dermatitis (seen in some ragweed-sensitive patients), exfoliative dermatitis (especially in patients sensitized to *Parthenium hysterophorus*), hand eczema, and acute eczema in one or more localized areas [cocklebur (*Xanthium* species) dermatitis] (2). Of course, Compositae dermatitis may manifest itself differently, from localized to widespread eczema, depending on the mode and order of magnitude of the exposure, and the sensitizing potential of the SL allergens. However, the fact that the three groups in the present study are of approximately the same size is different from previous studies, as summarized by Warshaw and Zug: localized hand and/or face dermatoses were the most common subgroups (3–5, 26, 30). This – combined with the course of the dermatitis – may indicate that the varying clinical patterns described here are snapshots of a disease that progresses gradually on continuing exposure in a manner similar to Compositae dermatitis in the United States, Australia, and India, although to a lesser degree because of the temperate climate and hence different sensitizers in northern Europe. This may also apply to less sensitizing species: we saw kitchen workers sensitized to lettuce with localized hand eczema and two outdoor lettuce gardeners with an exposed skin pattern because of the more extensive

handling of the plants (and possibly exposure to Compositae weeds).

Furthermore, even long-standing Compositae dermatitis may be manageable with topical steroids if exposure to strongly sensitizing plants is avoided (case 6), and this has also been reported previously from, for example, Australia (29). Thus, Compositae-allergic patients suffering from severe summer exacerbations despite avoidance of plant contact may not suffer because of the allergy, but because of a constitutional hand eczema becoming worse in summer, possibly with superimposed photosensitivity (31). Inadvertent indirect contact may, of course, be another contributing factor to the exacerbation, and should be managed through patient education. A small subset of patients claimed to have had widespread dermatitis from the beginning, but, as the data here are retrospective, there may be recall bias.

In conclusion, the prevalence of Compositae sensitization is continuously high in consecutive eczema

patients. Contact allergy may occur at any age in both atopic and non-atopic persons, and the SL mix combined with Compositae mix 6% and/or 5% pet. detects > 90% of the patients. The clinical features in monosensitized Compositae-allergic patients vary from localized hand eczema to dermatitis of exposed skin to widespread eczema. Vesicular volar eczema is frequent; vesicular contact dermatitis of the palms may mimic endogenous eczema, and recurrent vesicular eczema of the palms may facilitate sensitization to Compositae. With continuing exposure, patients from one clinical group may gradually develop more widespread and long-lasting dermatitis, similarly to classic Compositae dermatitis. Avoidance of contact with Compositae plants may clear the exogenous part of the dermatitis, but not the endogenous factors or possible complicating photosensitivity. Both a thorough clinical assessment and patient education are thus important in reducing the impact of Compositae contact allergy.

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