

ORIGINAL ARTICLE

Characteristics of Patients With Hand Dermatitis Referred to the Contact Dermatitis Unit of a Tertiary Hospital and Impact of Patch Testing on Diagnosis

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Abstract. *Objective.* This study aimed to define the epidemiological and clinical characteristics of patients referred to a contact dermatitis unit for hand dermatitis.

Material and methods. We retrospectively analyzed patients referred for hand dermatitis to the contact dermatitis unit of the Hospital Germans Trias i Pujol, Barcelona, Spain, between 2004 and 2007.

Results. A total of 96 patients were included. The most common diagnosis was irritant contact dermatitis, followed by allergic contact dermatitis, psoriasis, dyshidrosis, and atopic dermatitis. Standard patch tests were done for all patients and complementary batteries were ordered in 42 (44%). Patch tests were positive in 59% of the patients. Positive results were considered of present relevance in 59%, of past relevance in 6%, and of unknown relevance in the remaining positive tests. When proposed as the initial diagnosis, allergic contact dermatitis was confirmed in 67% of the patients. The most frequent clinically relevant allergens were chrome, nickel, rosin, plant allergens, and *p*-phenylenediamine.

Conclusions. Hand dermatitis is a frequent presenting complaint in our contact dermatitis unit, with allergic contact dermatitis being the most common. Good correlation was found between presumed diagnosis of allergic contact dermatitis and the finding of clinically relevant allergens.

Keywords: hand dermatitis, allergic contact dermatitis, irritant contact dermatitis, psoriasis, dyshidrosis, patch tests.

PERFIL DE LOS PACIENTES CON DERMATOSIS EN LAS MANOS REMITIDOS A LA UNIDAD DE CONTACTO DE UN HOSPITAL TERCIARIO E IMPACTO DE LAS PRUEBAS EPICUTÁNEAS EN EL DIAGNÓSTICO

Introducción. Se describe el perfil epidemiológico y clínico de los pacientes remitidos a una Unidad de Dermatitis de Contacto en los que el motivo de consulta había sido el presentar dermatosis en las manos.

Material y métodos. Evaluación retrospectiva de los pacientes remitidos con dermatosis de las manos a la Unidad de Contacto del Hospital Germans Trias i Pujol entre los años 2004 y 2007.

Resultados. Se incluyó un total de 96 pacientes. El diagnóstico más frecuente fue el de dermatitis de contacto irritativa (DCI), seguido por el de dermatitis de contacto alérgica (DCA), psoriasis, dishidrosis y dermatitis atópica. Se realizaron pruebas epicutáneas estándar en todos los casos y baterías complementarias en 42 (44%). Las pruebas epicutáneas fueron positivas en el 59% de los casos, considerándose de relevancia presente en el 22%, pasada en el 6% y desconocida en el resto. El diagnóstico inicial de DCA se confirmó en el 67% de los casos en los que representó la primera propuesta diagnóstica. Los alérgenos con relevancia clínica más frecuentes fueron el cromo, el níquel, la colofonía, diversos alérgenos de plantas y la *p*-fenilendiamina.

Conclusiones. Las dermatosis de las manos son un motivo habitual de consulta en la Unidad de Contacto, siendo el diagnóstico de DCI el más frecuente. Se encontró una buena correlación entre el diagnóstico de presunción de DCA y el hallazgo de alérgenos con relevancia clínica.

Palabras clave: dermatitis de las manos, dermatitis de contacto alérgica, dermatitis de contacto irritativa, psoriasis, dishidrosis, pruebas epicutáneas.

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Introduction

Hand dermatitis is one of the most common reasons for referral to contact dermatitis units, due both to the high prevalence of hand dermatitis in the general population (5-10%) and to the importance of this site in the context of occupational skin disease.¹ However, the epidemiological characteristics of patients with hand dermatitis may vary significantly from one contact dermatitis unit to another depending on the type of activity conducted in each unit and the characteristics of the catchment population. On the other hand, it would also be of interest to know to what extent patch testing—the basic examination practiced in the contact dermatitis unit—influences the final diagnosis compared to that suggested by the case history or physical examination.

The principal aim of the present study was to describe the epidemiological and clinical characteristics of patients referred to our contact dermatitis unit for dermatitis mainly affecting the hands. The impact of patch testing on the final diagnosis was evaluated as a secondary aim.

Material and Methods

Data were retrospectively collected from all patients referred for hand lesions to the contact dermatitis unit of Hospital Germans Trias i Pujol, Barcelona, Spain, between 2004 and 2007, irrespective of the assumed diagnosis. A computerized database was designed which included the variables listed in Table 1.

The professions were grouped under “Construction”, “Services”, “Industrial”, “Homemaker”, or “Nonemployed at the time of the visit”.

All patients underwent standard patch testing (TRUE Test, Allerderm, USA, with allergens from GEIDAC

Martí i Tor, Spain). In each case, complementary batteries and specific allergens were included when the clinician considered this advisable for the etiologic study (Hermal Trolab, Germany). Readings were taken at 48 and 96 hours, using the nomenclature recommended by international bodies. Positive readings were considered of present, past, or unknown relevance in relation to the clinical context. Complementary examinations, eg, prick test and radioallergosorbent test, were done as needed based on the provisional diagnosis.

To assess the impact of patch testing on the final diagnosis, the provisional diagnosis was compared to the diagnosis after performing and interpreting the patch test. Only the first of the diagnostic options noted in the medical record before and after patch testing—understood as the most probable alternatives—were taken into account.

Dermatitis was diagnosed when hyperkeratosis, desquamation, or fissures were present; categorization of their intensity and morphology was not possible due to the retrospective nature of the study. Dyshidrosis was considered to be present when there were the characteristic clinical lesions. Atopic dermatitis was diagnosed provided Hanifin and Rajka criteria were confirmed in the medical record. Finally, the specific nosological features of psoriasis meant that lesions characteristic of this disease at sites other than the hands were also taken into account.

Results

The study included 96 patients (49 men and 47 women) who had been referred to the contact dermatitis unit for localized hand dermatitis between January 2004 and May 2007; this population represented 23% (96/425) of the total number of patients who underwent patch testing during this period. The average age of the patients was 39 years (range, 4-81 years). A personal or family history of psoriasis was recorded in 7% (7/96) of patients and of atopic dermatitis in 9% (9/96). In most cases, the consultation was requested to rule out an occupational origin of the disease (66/96; 68%). Figure 1 shows the distribution of patients by profession. A total of 62% of the patients reported skin symptoms that had lasted for more than 1 year. Most referrals (93%) were made by dermatologists from the Dermatology Department itself or from the catchment area; the remaining patients (7%) were directly referred by the family doctor or other hospital specialists.

Lesions were limited to the hands in 62 patients (65%), but also affected the feet in 18 (19%), extended onto the arms in 8 (8%), and affected the trunk or other areas of the skin in 5 (5%).

The initial diagnosis by the dermatologist prior to patch testing was allergic contact dermatitis (ACD) in

Table 1. Variables Recorded

Sex
Age
Profession
Personal or family history of atopic dermatitis and psoriasis
Origin of the patient
Symptom duration
Initial diagnosis
Skin tests performed and outcome
Relevance
Final diagnosis

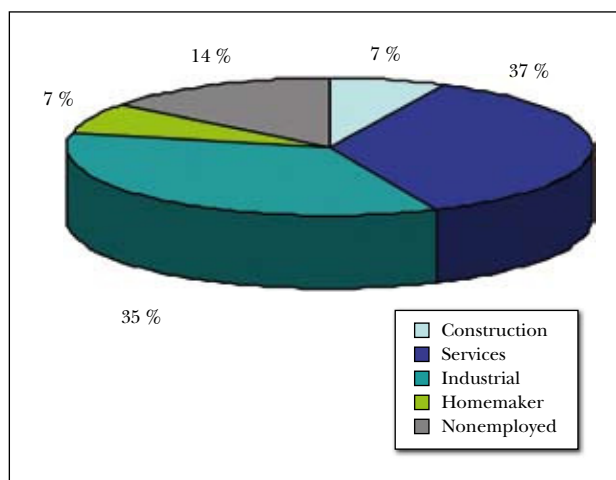


Figure 1. Classification of the Patients by Profession.

21 cases (22%), irritant contact dermatitis (ICD) in 29 (30%), psoriasis in 18 (19%), dyshidrosis in 18 (19%), and adult atopic dermatitis in 4 (4%). Other diagnoses proposed in isolated cases were vitiligo (1), tinea (1) and pustular psoriasis (2).

Patch tests were performed with complementary batteries in 42 patients (Hermal Trolab, Reinbek, Germany); patient-specific allergens were included in 11 cases (Table 2). Prick-by-prick tests were performed in 3 patients to rule out protein contact dermatitis, and challenge tests in 2 patients due to a provisional diagnosis of contact urticaria.

The tests were positive in 59% (57/96). The most frequent agents were nickel, *p*-phenylenediamine, chromium, palladium, cobalt, and rubber accelerators (thiuram and mercaptobenzothiazol). However, the physician considered positive results to be of present relevance in only 21 cases (22%), past relevance in 5 (5%), and unknown in the remaining patients (Tables 3 and 4). Two of the 3 prick-by-prick tests were positive to the flour patient had supplied and to potato, and, after comparison with healthy controls, the challenge tests employing hydrogen peroxide used in hairdressing procedures were considered positive in both patients who underwent the test.

The final diagnosis considered most likely was ACD in 21 cases, ICD in 28, psoriasis in 17, idiopathic dyshidrosis in 18, and atopic dermatitis in 4. Other diagnoses included: protein contact proteins (2), contact urticaria (2), vitiligo (1), pustular psoriasis (2), tinea (1), and lichen simplex chronicus (1) (Figure 2).

The disease was mainly limited to the hands in all the diagnostic groups. However, whereas this was the only area affected in the large majority of ICD patients (90%; 25/28), concomitant involvement of other areas was relatively frequent in patients with a diagnosis of ACD:

Table 2. Complementary Batteries Applied (Hermal Trolab, Germany)

Industrial dyes, 7
Cutting oil, 5
Antimicrobial agents, 1
Shoe allergens, 5
Photoallergens, 1
Photographic chemicals, 5
Medicaments, 2
Metals, 6
Hairdressing products, 2
Plant allergens, 2
Plastics and adhesives, 2
Methacrylates, epoxy resin, 1

Table 3. Positive Results to Patch Testing (Hermal Trolab, Germany; Martí i Tor, Spain; True test Allergan, USA)

Nickel, 27
<i>p</i> -Phenylenediamine, 10
Chromium, 8
Palladium, 7
Cobalt, 6
Associated with rubber: mercaptobenzothiazol, thiuram, black rubber mix, 8
Formaldehyde, 4
Euxyl K400, thiomersal, epoxy resin, rosin, ethylenediamine, 3
Quaternium 15, metallic mercury, fragrance mix, compositae mix, 2
Kathon CG, cutting oils, <i>p</i> -tert-butylphenol formaldehyde resin, budesonide, diclofenac, HEMA, ethylene glycol dimethacrylate, CD2, CD3, <i>p</i> -toluene, ammonium persulfate A, 4-aminophenol, Polygala myrtifolia, disperse yellow, 1

arms or legs (23%, 4/21), hands and feet (18%, 3/21), hands and face (12%, 2/21), or generalized (1/21). In total, a site additional to the hands was found in 59% of the patients with a final diagnosis of ACD. Disease on the hands and feet was also common among patients diagnosed with psoriasis (35%, 6/17) or dyshidrosis (38%, 7/18).

To assess the impact of patch testing on the final diagnosis, the initial diagnosis by the clinician was compared

Table 4. Positive Results of Clinical Relevance in Negative Patch Testing (Hermal Trolab, Germany; Martí i Tor, Spain; True test Allergan, USA)

Chromium (5)
Plants (3): <i>Polygala myrtifolia</i> (1); <i>compositae mix</i> (2)
Rosin (3)
Nickel (3)
Epoxy resin (3)
<i>p</i> -Phenylenediamine (3)
Other: fragrances (1), carba mix (1), thiuram (1), black rubber mix (1), cobalt (1), Kathon CG (1), formaldehyde (1), diclofenac (1), ammonium persulphate (1), 4-aminophenol (1), CD2, CD4, metol (1), metacrylates, <i>p</i> -tert-butylphenol formaldehyde (1)

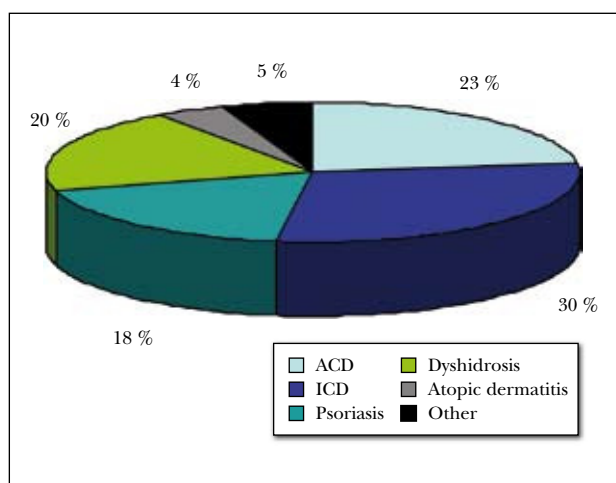


Figure 2. Classification of the Patients According to the Definitive Diagnosis. Abbreviations: ACD, allergic contact dermatitis; ICD, irritant contact dermatitis.

to that following patch testing and its interpretation. The initial diagnosis of ACD was confirmed in 67% (14/21) of the cases in which it was the first on the list of proposed diagnoses. In the remaining cases, the final diagnoses were ICD (3), psoriasis (2), idiopathic dyshidrosis (1), and atopic dermatitis (1). In contrast, 7 patients initially diagnosed with different skin diseases (2 with psoriasis, 1 each with atopic dermatitis and dyshidrosis, and 3 with ICD) were diagnosed with ACD after patch testing.

Discussion

In our series, nearly 1 in 4 patients who underwent patch testing during the recruitment period did so for lesions on the hands. This is consistent with hand dermatitis, which represent up to 30% of occupational diseases, being one of

the most frequent reasons for visits to units dedicated to contact and occupational dermatoses.²⁻⁴

From an epidemiological viewpoint, the almost equal number of men and women in the present study is in striking contrast to other series in which women clearly predominate.⁵ It should be taken into account, however, that the recruitment process did not exclude patients with non-eczema hand dermatitis—for example, psoriasis—when there was possible diagnostic confusion with contact dermatitis. Although the inclusion of these patients hinders the comparison of data with other groups, it does reflect the type of activity conducted in our unit, which is not specialized in occupational dermatitis. Most patients were young and of working age, as previously described.⁶

In the present series, only the first choice from the list of possible final diagnoses was taken into account, accepting the limitations associated with this method. Other limitations of the research should also be borne in mind, such as it being a retrospective study and the small number of patients included in the series. Given these considerations, ICD was the most frequent disease entity, followed by ACD, idiopathic dyshidrosis, psoriasis of the hands, and, finally, atopic dermatitis. The etiological diagnosis and classification of the different variants of dermatitis of the hands is recognized as a complex issue, due to the fact that the distinction between these diseases can be unclear and that they can share clinical features.⁴

ICD is recognized as the most frequent cause of hand dermatitis in different series.⁷ Irritants not only act as primary agents, but also as aggravating factors in patients with other exogenous or endogenous skin diseases.⁸

In the present series, 59% of patients with hand dermatitis were positive to at least one of the allergens tested. However, this was considered of present relevance in only 21% of patients, which is within the different ranges described in the literature.^{9,10} In this regard, it is known that patients with hand dermatitis have an incidence of ACD that can be lower than that observed in patients with dermatitis in other locations. It should be emphasized that in 24% of the patients with relevant positive results, these occurred in response to allergens from the complementary series or to those provided by the patients, a situation that shows not only the importance of the case history, but also the limitations of the standard battery when studying these patients.¹¹ These results—where the most frequent clinically relevant reactions were to metals, plants, rosin, and *p*-phenylenediamine—when taken together are similar to those of other series with a greater number of patients, although with certain differences that may be explained by the setting or by the selection criteria.^{9,12-14}

In particular, attention should be drawn to the limited relevance of rubber allergens, which some studies have found to be significant.

The second most frequent diagnosis was dyshidrosis; the theories concerning the etiology and pathogenesis of this clinical entity are controversial and often contradictory, and probably involve various etiological factors, such as irritants, allergens, and idiosyncratic factors.¹⁵ None of the patients with dyshidrotic lesions presented signs, symptoms, or a medical history that permitted them to be classified as atopic individuals, another aspect often cited in the literature as an etiological factor.¹⁵

The high prevalence of psoriasis is noteworthy in the present series. This skin disease is explicitly excluded from most studies on hand dermatitis, as it is not related to eczema. However, some patients with psoriasis could well be included within so-called eczema tyloiticum or hyperkeratotic eczema variants, which have a chronic course, are resistant to treatment, and are normally negative to patch testing.⁴ In fact, the clinical features of psoriasis of the hands can often be the same as those of eczema, particular when it affects the fingers, and it is also reasonable for it to worsen in the context of heavy manual labor.¹⁶ The fact that a previous personal history of psoriasis was noted in only 3 patients (17%) is of relevance; in our experience, disease of the hands can often be the first sign that leads to this diagnosis. This situation does not reduce the need to perform patch tests. On the contrary, these are indicated to rule out the coexistence of both disorders.

There was a very small number of patients classified as atopic in our series, a situation that contrasts with the data reported by other groups, who regard it as one of the most relevant etiological factors in endogenous skin disease.¹⁷ This fact could be related to the low prevalence of atopic dermatitis in our group, indicated by the absence of a personal or family background related to this disease.⁴

Regarding the distribution of the lesions, dermatosis limited to the hands was much more prevalent among those patients in whom this was attributed to ICD, which is consistent with irritants generally being restricted to this location.

Patch testing is a standard diagnostic procedure for hand dermatitis. In the present series, the initial diagnosis of ACD was confirmed in nearly 70% of patients. On the other hand, a small but nonnegligible number of patients with other initial diagnoses were diagnosed with ACD after patch testing; this finding is important on considering that the diagnosis can affect the individual's employment situation or involve legal issues.

Finally, it is worth emphasizing that in 2 of the 3 patients in whom the case history led to suspected protein contact dermatitis, this was confirmed through

prick testing. In addition, the challenge test was also of relevance in 2 patients with suspected contact urticaria. Although the number of patients included in the study was small, it reminds us of the need for dermatologists to be aware of and implement other skin allergy tests, in addition to patch testing.¹⁸⁻²⁰

Conclusions

Hand dermatitis is a common reason for consultation at the contact dermatitis unit. In most cases, the patients are young men or women who are experiencing a negative impact on their employment situation due to dermatitis. The most frequent final diagnosis in our unit was ICD, followed by ACD, idiopathic dyshidrosis, psoriasis, and atopic dermatitis. This study found a good correlation between suspected ACD and the relevance of patch testing.

In general, the etiological diagnosis of hand dermatitis is often complicated by the frequent convergence of clinical signs and symptoms, and by the occasional presence of more than 1 disease entity in a single patient.

Conflict of Interest

The authors declare no conflicts of interest.

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