DERMATOLOGICA SINICA 33 (2015) 181–186

Contents lists available at ScienceDirect

Dermatologica Sinica

journal homepage: http://www.derm-sinica.com

ORIGINAL ARTICLE

Contact dermatitis to topical medicaments: A retrospective study from a medical center in Taiwan

Yi-Hsien Shih [1, 2, 3], Chee-Ching Sun [4], Yu-Hsian Tseng [4], Chia-Yu Chu [4, *]

[1] Department of Dermatology, Taipei Medical University-Shuang Ho Hospital, New Taipei City, Taiwan
[2] Department of Dermatology, School of Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan
[3] Graduate Institute of Medical Sciences, College of Medicine, Taipei Medical University, Taipei, Taiwan
[4] Department of Dermatology, National Taiwan University Hospital and National Taiwan University College of Medicine, Taipei, Taiwan

ARTICLE INFO

Article history:
Received: Oct 3, 2014
Revised: Feb 1, 2015
Accepted: Mar 3, 2015

Keywords:
contact dermatitis
medicaments
patch test

ABSTRACT

Background/objective: Contact dermatitis to topical medicaments is commonly encountered in daily practice of dermatologists. The incidence and ranking of common allergens in topical medicaments may vary depending on local prescription and self-medication behavior. The objective of this study is to investigate the clinical features and common allergens of contact dermatitis to topical medicaments in Taiwan.

Methods: From 1978 to 2005, a total of 3717 patients had been patch tested in our Contact Dermatitis Clinic. Any case with suspected contact allergy to topical medicaments receiving patch testing was included in this study.

Results: During this period, a total of 608 patients were included and 603 of them completed the patch tests. Of the 603 patch-tested patients, 397 (66%) were positive for at least one antigen, and all patch tests were negative in 206 (34%). Patients with positive patch testing were characterized by younger age and location on the limbs and skin folds, while sex and atopy were not different among the two groups. A total of 1076 positive reactions to identifiable medicaments or main ingredients were recorded in 397 patients with positive patch testing. Among these positive reactions, 701/1076 counts (65%) were read as relevant. Traditional herbal medicaments (50%), antiseptics (21%), vehicle ingredients (9%), antibiotics (8%), corticosteroids (2%), anesthetics (2%), and nonsteroidal anti-inflammatory drugs (1%) were the most common sensitizers in this study, and the common concomitant allergens were fragrance (52%) and metal (20%).

Conclusion: The results emphasized the special cultural consideration in Taiwanese patients with contact dermatitis to topical medicaments.

Introduction

Allergic contact dermatitis (ACD) is an inflammatory disease caused by type IV delayed hypersensitivity.[1] In daily clinical practice, dermatologists prescribe various topical medicaments. The use of over-the-counter topical agents is also very popular. Thus, sensitization to topical medicaments occurs from time to time.

Previous studies showed that the prevalence of ACD to topical medicaments varied from 14% to 40% of patients in contact clinics.[2,3] Common allergens in medicaments include local anesthetics, antibiotics, antimicrobials, antivirals, antimycotics, corticosteroids, antihistamines, nonsteroidal anti-inflammatory drugs (NSAIDs), and ingredients of the vehicles.[1–3] However, the incidence and ranking of culprit allergens in topical medicaments may differ across the world due to different local prescribing and self-medication habits.[4]

Factors predisposing to medicament contact dermatitis include the intrinsic sensitizing potential of each drug, higher concentrations, increased penetration, older age,[5] damaged skin barrier, and

Conflicts of interest: The authors declare that they have no financial or non-financial conflicts of interest related to the subject matter or materials discussed in this article.

* Corresponding author. Department of Dermatology, National Taiwan University Hospital, 7 Chun-Shan South Road, Taipei 100, Taiwan.
E-mail address: chiayu@ntu.edu.tw (C.-Y. Chu).

http://dx.doi.org/10.1016/j.dsi.2015.02.005

chronic dermatological conditions such as atopic dermatitis.[6,7] Sites at risk include eyes,[8] vulvae,[9] perianal areas,[10] and leg ulcers.[11]

The objective of this study is to investigate the clinical features and common allergens of ACD to topical medicaments in Taiwan.

Methods

Patient history and demographics

The patient data in our study was collected in the Contact Dermatitis Clinic of the National Taiwan University Hospital, a medical center for patch testing in northern Taiwan. The patients consisted of Taiwanese, Hakka, aborigines, and immigrants from Mainland China.[12] From 1978 to 2005, a total of 3717 patients were included. For every patient with suspected ACD seen in this clinic, a questionnaire, as described elsewhere,[13] was completed, which included a detailed history of occupation, affected sites, appearance of the skin lesions, and the possible exposure source. Personal or familial atopy diathesis was considered positive if the patients or their families had atopic dermatitis, allergic rhinitis, or asthma. This study followed the Declaration of Helsinki on medical protocol and ethics. Written informed consent was obtained from all participating adult patients and from parents or legal guardians for minors or incapacitated adults.

Patch testing

Every patient with suspected ACD to topical medicaments received a comprehensive patch test with the European standard series, and the related topical agents were also patch tested. Patch testing followed the protocol recommended by the International Contact Dermatitis Research Group with Finn Chambers (Epitest Ltd Oy, Tuusula, Finland) on Scanpor tapes (Norgesplaster AS, Vennesla, Norway) applied to a lesion-free area on the back. The Scanpor tapes were further affixed with 3M (3M, St Paul, MN, USA) tape. The patches were removed after 2 days; the sites were examined for evidence of reaction on Day 2 (D2) and D4 or on D3 alone. The reading on D3 or D4 was considered positive if the reaction was equal to or stronger than palpable erythema, according to the guidelines of the International Contact Dermatitis Research Group.[12,14]

Study design

Patch test data were retrospectively analyzed. Patient history and demographics disclosed in the questionnaire were compared using proper statistics. ACD to topical medicaments was defined as having a positive reaction to at least one of the topical medicaments in the patch test series. The clinical relevance of a positive patch test reaction was defined as previously reported.[15]

Results

From 1978 to 2005, 3717 patients were patch tested in our Contact Dermatitis Clinic. Among them, 608 were suspected to be allergic to topical medicaments, of whom 603 completed the patch tests. Of the 603 patch-tested patients, 397 (66%) were positive for at least one antigen, and all patch tests were negative in 206 (34%). Patient history and demographics are summarized in Table 1. Patients who reacted to at least one positive antigen on patch testing were defined as "Medicament (+)," while patients who had negative results were defined as "Medicament (−)." The mean age in the Medicament (+) group (36.9 ± 15.9 years) was significantly less than that of the Medicament (−) group (40.1 ± 17.5 years). More lesions of the upper limbs, lower limbs, and skin folds were noted in the Medicament (+) group, while more lesions of the face and trunk were noted in the Medicament (−) group. No difference in sex or atopy diathesis was found among the two groups.

Table 1 Demographic characteristics of patient population.

	Medicament (+)	Medicament (−)	*p*
Age (y)[a]	36.9 ± 15.9	40.1 ± 17.5	0.024*
Sex[b]	Male: 133 (33.5)	Male: 63 (30.6)	0.468
	Female: 264 (66.5)	Female: 143 (69.4)	
Lesion site	Face[b]: 124 (31.2)	Face: 94 (45.6)	<0.001**
	Trunk[c]: 3 (0.8)	Trunk: 9 (4.4)	0.004***
	Upper limbs[b]: 113 (28.5)	Upper limbs: 39 (18.9)	0.011**
	Lower limbs[b]: 161 (40.6)	Lower limbs: 59 (28.6)	0.004**
	Skin folds[b]: 98 (24.7)	Skin folds: 29 (14.1)	0.002**
History of atopic dermatitis[b]	109 (36.1)	58 (36.3)	0.998
Missing: 141			

Data are presented as *n* (%).
Medicament (+) = patients who reacted to at least one positive antigen on patch testing; Medicament (−) = patients who had negative results on patch testing.
*$p < 0.05$.
**$p < 0.05$.
***$p < 0.05$.
[a] Student *t* test
[b] Chi-square test
[c] Two-sided Fisher's exact test.

A total of 1076 positive reactions to identifiable medicaments or main ingredients were recorded in 397 patients with positive patch testing. The frequency of positive reactions to topical medicaments in each patient were as follows: 138 patients had reactions to only one topical medicament, 90 had ACD to two medicaments, 51 had reactions to three medicaments, and 118 had reactions to more than four medicaments.

Among these positive reactions, 701/1076 counts (65%) were read as relevant. Traditional herbal medicaments (50%), antiseptics (21%), vehicle ingredients (9%), antibiotics (8%), corticosteroids (2%), anesthetics (2%), and NSAIDs (1%) were the most common sensitizers in this study (Figure 1). The top five common allergens in traditional herbal medicaments were wind oil, Red Tiger Balm, White Tiger Balm, nutmeg oil, and eucalyptus oil (Table 2). Thimerosal, ammoniated mercury, nitrofurazone, mercurochrome, and betadine were common allergens in antiseptics, while formaldehyde, amerchol 101, hydrophilic ointment, cetylstearyl alcohol, eucerin, and paraben mix ranked high as common allergens in vehicles (Table 3). Importantly, neomycin sulfate caused much more positive patch test reactions than fusidic acid, tetracycline, and chloramphenicol (Table 3). To a total of 53 positive patch test reactions to antimicrobials, neomycin contributed 32 counts (60%). By contrast, fluocinonide (Topsym cream), fluticasone (Cutivate

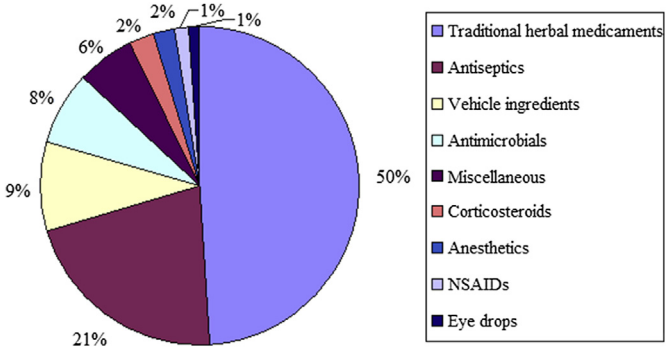

Figure 1 Main categories of relevant allergens in patients with allergic contact dermatitis to topical medicaments. NSAID = nonsteroidal anti-inflammatory drug.