

drugs was negative. Latex, vecuronium, and propofol-specific IgE antibodies were negative. We also performed a provocative test with latex (wearing of a glove for 2 h) and with lidocaine (subcutaneous injection of lidocaine 2% up to a cumulative dosage of 5 ml). The patient had no reaction to either substance. Finally, chlorhexidine was suspected, because a gel containing 0.05% chlorhexidine gluconate solution

(EndosgelTM, and InstillagelTM, ALMED) was introduced intraurethrally in all urologic procedures. The prick test showed

an immediate strong positive response to chlorhexidine gluconate (0.0005%) with a stronger delayed reaction 6 h later. Moreover, chlorhexidine-specific IgE antibodies were demonstrated (Laboratory CERBA, Paris, France).

To our knowledge, this is the first published case of allergy to chlorhexidine with recurrent episodes of anaphylactic reactions after intraurethral exposure. The most severe, life-threatening reactions during TURP may be induced by the release of chlorhexidine into the surrounding tissue or blood during the surgical procedure.

Only a few reports of severe allergic reactions related to chlorhexidine use have been well documented (1–5). Chlorhexidine is widely used as an antiseptic in mouthwashes, skin ointments, antiseptic-coated central venous catheters, and gels for urologic procedures. Life-threatening reactions are generally associated with mucosal or parenteral exposure (2), whereas cutaneous exposure usually leads to contact allergic dermatitis (3). Anaphylactic shock is probably underreported. In view of the worldwide use of chlorhexidine, we would like to call attention to the risk associated with the use of this antiseptic.

Chlorhexidine, a widely used antiseptic, may cause life-threatening anaphylactic shock, even when introduced intraurethrally.

*Medical Clinic I
Department of Internal Medicine
Geneva University Hospital
24 Rue Micheli-du-Crest
CH-1211 Geneva 14
Switzerland
Tel. +41-22-372 33 11
Fax: +41-22-372 91 16
e-mail: Jacques.Wicki@hcuge.ch

Accepted for publication 17 March 1999
Copyright © Munksgaard 1999
ISSN 0105-4538

References

1. Yong D, Parker FC, Foran SM. Severe allergic reactions and intra-urethral chlorhexidine gluconate. *Med J Aust* 1995;**162**:257–258.
2. Okano M, Nomura M, Hata S, et al. Anaphylactic symptoms due to chlorhexidine gluconate. *Arch Dermatol* 1989;**125**:50–52.
3. Toricelli R, Wüthrich B. Life-threatening anaphylactic shock due to skin application of chlorhexidine. *Clin Exp Allergy* 1996;**26**:112.
4. Mitchell DJ, Parker FC. Anaphylaxis following urethral catheterisation. *Br J Urol* 1993;**71**:613.
5. Oda T, Hamasaki J, Kanda N, Mikami K. Anaphylactic shock induced by an antiseptic-coated central nervous catheter. *Anesthesiology* 1997;**87**:1242–1244.

Allergy to storage mites

C. Marcos Bravo*, I. Luna Ortiz, A. Outón Soto, R. González Vázquez

Key words: allergic diseases; house-dust mites; specific IgE; storage mites.

● In recent years, there has been an increasing interest in the allergenicity of storage mites, and there is evidence that sensitization to their allergens is not limited to individuals with occupational exposure (1, 2) as first thought. The purpose of this study was to evaluate the prevalence of sensitization to *Lepidoglyphus destructor* (Ld), *Glycyphagus domesticus* (Gd), *Acarus siro* (As), and *Tyrophagus putrescentiae* (Tp) in patients with positive skin tests to

Dermatophagoides house-dust mites in the Spanish environment.

The patients selected for this study were those attending our department for the first time in the year 1992 due to rhinitis and/or bronchial asthma and with positive cutaneous tests to *Dermatophagoides* mites (*D. pteronyssinus*, *D. farinae*). We studied 133 patients, 69 males (51.88%) and 64 females (48.12%), aged 17.4±10.6 years (range, 7–81 years). The patients were diagnosed with rhinoconjunctivitis (48.29%), rhinoconjunctivitis and asthma (34.03%), and asthma (17.68%) by assessment of clinical history. They were not occupationally exposed to storage mites and came as often from rural as urban environments.

All the patients had positive skin prick tests to *D. pteronyssinus* (Dp) 100 BU/ml and/or *D. farinae* (Df) with 100 BU/ml extracts (ALK-Abelló). The cutoff for a positive skin test was defined as a wheal at least similar to the histamine control and 3 mm larger than the saline control.

Specific IgE antibodies to the mites Dp, Df, As, Gd, Ld, and Tp were measured by the Pharmacia CAP System RAST FEIA (Pharmacia & Upjohn Diagnostics, Uppsala, Sweden) according to the manufacturer's instructions. The results were expressed in kU/l and were classified by the CAP System RAST FEIA reference (classes 0–6). Values greater than class 1 were considered positive.

Statistical analysis was as follows. Correlation coefficients of Pearson (*r*) between positive CAP scores were calculated to estimate the strength of the relationships between the different species of storage mites and *Dermatophagoides* mites. From these tests, a *P* value was obtained and considered significant if it was below 0.05.

Ninety-eight of the 133 patients allergic to *Dermatophagoides* had positive specific IgE against at least one of the storage mites (73.6%). Ld was the most frequently detected storage mite (68.42%). Less positive CAP results were obtained for Tp (64.66%), Gd (57.14%), and As (48.12%).

Table 1. CAP results, in relative percentages, of *Dermatophagoides* and storage mites

Species	Class 0	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6
Dp	1.5	0	10.52	19.54	27.06	18.04	23.30
Df	5.26	2.25	15.78	37.59	23.30	9.77	6.01
As	51.87	21.05	25.56	0.75	0.75	0	0
Gd	42.85	12.03	22.55	18.04	3.75	0.75	0
Ld	31.57	15.03	25.56	15.78	6.76	3.75	1.50
Tp	35.33	16.54	29.32	17.29	1.50	0	0

The levels of specific IgE to *Dermatophagoides* mites were much higher than to storage mites (Table 1). Among the storage mites, Ld was also the mite detected with the highest CAP levels.

In the comparative analysis of specific serologic IgE determinations, we obtained significant correlation coefficients for specific IgE against all the

mites except *Dermatophagoides* mites with Ld: Dp-Ld ($r=0.10$) and Df-Ld ($r=0.13$). The highest correlation coefficients were obtained for Gd-Tp ($r=0.87$), Ld-Gd ($r=0.85$), Ld-Tp

($r=0.70$), and Dp-Df ($r=0.77$). Although the correlations of CAP titers for *Dermatophagoides* with Tp, Gd, and As on the one hand, and As with Ld, Tp, and Gd on the other, were much weaker, they were statistically significant ($P<0.05$): Dp-As ($r=0.33$), Dp-Gd ($r=0.20$), Dp-Tp ($r=0.29$), As-Ld ($r=0.28$), As-Gd ($r=0.25$), and As-Tp ($r=0.32$).

A high prevalence of sensitization to storage mites was found in patients allergic to *Dermatophagoides* mites.

We found a high prevalence of storage mite sensitization in *Dermatophagoides*-allergic patients (73.6%) in our environment. These patients came from the region of the Atlantic coast of Spain, where the sensitization to *Dermatophagoides* is the most important cause of allergic respiratory diseases. Other studies (3, 4) have also found such high prevalences (83.1%, 88.4%). A lower level of prevalence (46%) was obtained in a study performed in The Netherlands (5).

In our study, the results of the CAP correlation analysis show allergenic similarity between all the mites except between Ld and Dp and Df. This fact has been also reported by other authors (2, 6). Furthermore, Ld, Gd, and Tp seem to be allergenically more closely related to each other than to As.

Otherwise, the storage mite Ld was found to have the highest prevalence and the highest levels of IgE, and it was the only one for which we had not found allergenic similarity with Dp and Df. These facts make us think that at least some of the response to storage mites observed in our patients was the consequence of cosensitization.

*Seccion Alergología
Complejo Hospitalario Xeral-Cies
C/ Pizarro 22
36204 Vigo
Spain

Accepted for publication 6 April 1999
Copyright © Munksgaard 1999
ISSN 0105-4538

References

1. Ebner C, Feldner H, Ebner H, Kraft D. Sensitization to storage mites in house dust mite (*Dermatophagoides pteronyssinus*) allergic patients. Comparison of a rural and an urban population. *Clin Exp Allergy* 1994;24:347-352.
2. Luczynska CM, Griffin P, Davies RJ, Topping MD. Prevalence of specific IgE to storage mites (*A. siro*, *L. destructor* and *T. longior*) in an urban population and crossreactivity with the house dust mite (*D. pteronyssinus*). *Clin Exp Allergy* 1990;20:403-406.
3. Vidal C, Chomón B, Pérez-Carral C, González-Quintela A. Sensitization to *Lepidoglyphus destructor*, *Tyrophagus putrescentiae*, and *Acarus siro* in patients allergic to house dust mites (*Dermatophagoides* spp.). *J Allergy Clin Immunol* 1997;100:716-718.
4. Puerta Llerena L, Fernández Caldas E, Caraballo Gracia LR, Lockey RF. Sensitization to *Blomia tropicalis* and *Lepidoglyphus destructor* in *Dermatophagoides* spp.-allergic individuals. *J Allergy Clin Immunol* 1991;88:943-950.
5. van der Heide S, Niemeijer NR, Hovenga H, de Monchy JGR, Dubois AEJ, Kauffman HF. Prevalence of sensitization to the storage mites *Acarus siro*, *Tyrophagus putrescentiae*, and *Lepidoglyphus destructor* in allergic patients with different degrees of sensitization to the house-dust mite *Dermatophagoides pteronyssinus*. *Allergy* 1998;53:426-430.
6. Hage-Hamsten M, Johansson SGO, Johansson E, Wiren A. Lack of allergenic crossreactivity between storage mites and *Dermatophagoides pteronyssinus*. *Clin Allergy* 1987;17:23-31.