

Prevalence of latex hypersensitivity in the Hospital of León

J. L. Estrada Rodríguez, F. Gozalo Requés, R. de Castro Losa^a and A. García González^a

Allergy and ^aPreventive Medicine Services, Hospital de León, León, Spain

Latex hypersensitivity among health care personnel has an incidence ranging between 2.6 and 16.9%, according to the risk group and the type of test chosen (specific IgE, prick test or questionnaire; Table I). This problem is more frequent among dentists, surgeons and operating theatre nurses, and its prevalence rises up to 24% when personnel with a past history of atopic complaints is selected. However, latex-induced anaphylaxis may also occur in individuals with no occupational exposure to the substance, and specific IgE at levels higher than 1.5 kU/l can be detected in up to 2.3% of all blood donors (Table II). Also atopic children with no other risk factors frequently evidence rubber (latex) allergy.

Among health care personnel, the main route of exposure is the inhalational one, and sensitization precedes the development of clinical symptoms by months or years. It is thus not infrequent for the initial manifestation of latex allergy to consist of severe reactions occurring in the course of medico-surgical interventions or explorations.

The environmental levels of the allergen are subject to considerable variation between the various areas in the hospital. They are obviously highest in the operating theatres, blood collection areas or cystoscopy facilities, among others

Table I. Prevalence of latex allergy among health care personnel

Author	Year	Population	No. of individuals	Method	Sensitization (%)
Rico Díaz	1996	Nurses	161	Prick	6
Zoltan	1992	Dentists	1043	Questionnaire	8.8
Lagier	1992	Operating theatre nurses	197	Prick	10.7
Arellano	1992	Surgeons, radiologists, anaesthesists	101	Prick	9.9
Vandenplas	1995	Hospital workers	273	Prick	4.7

Table II. Prevalence of latex sensitization among the general population

Author	Year	Population	No. of individuals	Method	Sensitization (%)
Ownby	1996	Blood donors	1000	IgE (1.5 kU/l)	2.3
Merret	1995	Blood donors	1436	IgE (0.7 kU/l)	4
Arellano	1992	Atopics	100	Prick	3
Ylitalo	1997	Atopic children	2265	Prick	1.3

(Table III). As was only to be expected, the environmental levels of the allergen correlate with the number of pairs of gloves used.

Over the last few years, a vast number of reports have been published concerning latex allergy, particularly in the U.S.A. It is well known that health care professionals constitute a high-risk group for the development of this potentially dangerous form of allergic sensitization. However, over that same last few years consultations by physicians, surgeons and nurses because of this problem have been exceptional. We therefore

Table III. Latex concentrations in various areas of a hospital (Mayo Clinic)*

Sampling area	Allergen concentration (ng/m ³ air)
<i>Areas with frequent use of gloves</i>	
Urology - cystoscopy	121.8
Rooms of surgical patients (n = 5)	111 ± 25
Orthodonty	99.8
Dermatologic surgery	78.5
Collection area of the blood bank	46.3
Blood component separation laboratory	38.4
Pathology laboratory	37.4
Extraction room	29.6
Cross-typing room of the blood bank	16.4
Haematology laboratory	14.3
Allergy laboratory	13.8
<i>Areas with infrequent use of gloves</i>	
Allergy outpatient clinic	1.8
Spirometric testing room	0.6
Bone marrow transplantation ^a	0.6
Viral serology laboratory ^b	0.3
<i>Personnel sampling</i>	
Haematology laboratory technicians	8.4
Blood extraction personnel	81.5
Anaesthesists (n = 9)	419 ± 292

^a Use of dust-free gloves; ^b Use of vinyl gloves.

* Modified from Reference 11.

decided to carry out a study of the prevalence of latex hypersensitivity in our hospital.

MATERIAL AND METHODS

A total of 99 health care professionals in the Hospital de León were studied. They all completed a questionnaire recording the past medico-surgical history, atopic antecedents, data on occupational exposure to latex (work site, estimation of the use of rubber gloves expressed in hours-day) and extra-occupational exposure (use of preservatives, odontologic manipulations), as well as the occurrence of symptoms with rubber products and fruits.

Determinations of latex-specific IgE (AlaSTAT DPC, Los Angeles, California, USA) and total serum IgE were performed in all cases. Prick tests were carried out with a standard panel of airborne allergens including mites, grass and *Plantago* pollens and cat epithelia. Prick tests were also performed with a commercial latex extract (Abelló, S. A., Madrid, Spain) in all cases but one, who had a high level of specific IgE and a past history of severe anaphylaxis. In the latex prick tests, the test was considered to be positive when the elicited wheal was greater than 3 mm. The quantification of specific IgE was considered to be positive when the result was greater than 1.5 kU/l. Both criteria were required for considering that a given subject was sensitized (with the above-mentioned exception).

RESULTS

Out of the 99 people screened, 77 were women and 22 were men (M/F ratio = 0.29), and their ages

ranged between 22 and 64 years (mean, 39 ± 8.43 years). Thirty-three considered themselves to be atopic, but only 25 had positive prick tests with the airborne allergens tested. Thirty-five reported a history of dermatitis; 53 worked within high-risk areas (haemodialysis, surgical wards or operating theatres). Fifty individuals carried rubber gloves for over 3 hours daily (ten carried them during less than one hour daily). Nineteen persons reported symptoms in relation to the gloves, and nine upon ingestion of related fruits. In a total of 7 workers latex hypersensitivity was diagnosed (Table IV).

DISCUSSION

The observed prevalence of latex allergy among health care personnel in the Hospital de León is similar to that reported in other recent studies in Spain. As expected, the positive cases occurred among personnel working in high-risk areas. However, this observed prevalence may be somewhat higher than the true one, as some of the cases "autoselected" themselves by working in areas of massive glove use or by having a past history of allergy. It is however surprising that, although the prevalence of latex sensitization in our environment is not in the least negligible, few workers consulted spontaneously for this reason. This may be explained by the fact that a large number of the sensitized individuals do not habitually present symptoms when using latex gloves, or perhaps through ignorance of the potential risks. It is also possible that the delay in Spanish and European hospitals in the massive use of latex gloves as compared to the U.S.A. (where this started in the early 80s at the time of the eclosion of

Table IV. Latex sensitization among 99 health workers at the Hospital de León. Clinical characteristics of the seven sensitised individuals

Case	Age (years)	Atopy	Occupation	Period of evolution (years)	Occupational symptoms	Symptomatic manipulations	Involved foodstuffs
1	32	Yes	Surgeon	—	—	—	—
2	51	No	Surgical nurse	8	U, Ae	—	Chestnut
3	26	Yes	Surgical nurse	3	RC, A, Ae, U	Dentist, catheters	Chestnut, peach
4	30	No	Anaesthetist	3	RC, A, U	Dentist	Avocado, chestnut
5	32	Yes	Surgical auxiliary	1	UC, A	Gynecologist	—
6	31	No	Haemodialysis nurse	1	Seasonal pruritus	—	—
7	43	Yes	Surgeon	—	—	—	—

AIDS) and the introduction in recent years of vinyl gloves with low latex contents for laboratory use, together with favourable changes in the type of powdering, may have contributed to a lower prevalence of sensitisation in our country.

Finally, we believe that the scheduled visits of the workers to the Occupational Medicine units may be taken advantage of for carrying out a simple and highly cost-efficient screening procedure, namely the assay of specific IgE.

REFERENCES

1. Ownby DR, Ownby HE, McCullough, Shafer AW. The prevalence of anti-latex IgE antibodies in 1000 volunteer blood donors. *J Allergy Clin Immunol* 1996; 97: 1188-1192.
2. Lagier F, Verloet D, Lhermet I, Poyeh D, Charfim D. Prevalence of latex allergy in operating room nurses. *J Allergy Clin Immunol* 1992; 90: 319-322.
3. Yassin MS, Lierl MB, Fischer Tj, O'Brien K. Latex allergy in hospital employees (Abstract). *J Allergy Clin Immunol* 1993; 91: 1140-5.
4. Berky ZT, Luciano J, James WD. Latex glove allergy. A survey of the US army dental corps. *JAMA* 1992; 268 (19): 2695-7.
5. Rico Díaz A, Soto Mera T, López Rico, et al. Frecuencia de alergia al látex en ATS y Auxiliares de Enfermería en el Complejo Hospitalario Juan Canalejo. A Coruña. (Abstract). *Rev Esp Alergol Immunol Clin* 1996; 11 (2): 273.
6. Lagier F, Vervloet D, Lhermet I. Prevalence of latex allergy in operating room nurses. *J Allergy Clin Immunol* 1992; 319-22.
7. Ylitalo L, Turjanmaa K, Palosuo T. Natural rubber latex allergy in children who had not undergone surgery and children who had undergone multiple operations. *J Allergy Clin Immunol* 1997; 100: 606-12.
8. Turjanmaa K, Alenius H, Mäkinen-Kiljunen S. Natural rubber latex allergy (review). *Allergy* 1996; 51: 593-602.
9. Arellano R, Bradley J, Sussman G. Prevalence of latex sensitization among hospital physicians occupationally exposed to latex gloves. *Anesthesiology* 1992; 77: 905-908.
10. Turjanmaa K, Alenius H, Mäkinen-Kiljunen S. Natural rubber latex allergy. *Allergy* 1996; 51: 593-602.
11. Swanson MC, Bubak ME, Hunt LW. Quantification of occupational latex aeroallergens in a medical center. *J Allergy Clin Immunol* 94: 3 (1): 446.

Allergic contact dermatitis due to prednicarbate

D. Herrero, M. M. Garcés, P. Carretero, F. García, M. C. Gutiérrez^a, M. Marcos, L. Alonso, J. Blanco, R. Pérez and S. Juste

Allergy Section and ^aDermatology Service, "General Yagüe" Hospital, Burgos, Spain

Prednicarbate is a new glucocorticosteroid for topical use. It has the same chemical structure as prednisolone, with two side chains added: one at C-17 (ethyl-carbamate) and the other at C-21 (propionate ester). The introduction of these two lipophyllic component groups facilitates and increases the passage of prednicarbate through the skin barrier.

Prednicarbate is an unstable molecule which is metabolised on contact with the skin, rapidly releasing the C-21 side chain and undergoing partial hydrolysis at C-17, for which reason it has but few side effects.

CASE REPORT

The patient was a 24-year-old woman with no previous history of contact dermatitis. After her first axillary hot wax depilation she developed erythematous papules in the right axilla, which she treated with Peitel® cream (prednicarbate). After three days of this treatment she developed vesicular lesions with oedema, erythema and intense pruritus not only in the right armpit but also in the left one and in the periaxillary area. She thereupon changed the topical treatment from Peitel® to Clotrasone® (betametasone dipropionate and clotrimazole), with improvement after three days and resolution of the clinical picture in one month. The patient was referred for study to our outpatient clinic.

The standard European panel of epicutaneous tests was administered, with negative results after both 48 and 96 hours. The epicutaneous test with Peitel® was positive (+++) after 96 hours. The epicutaneous tests with a corticosteroid panel were positive (+++) after 96 hours for prednicarbate and budesonide, the remainder being negati-