

RESEARCH ARTICLE

The Incidence of Latex Sensitivity Amongst Operation Theatre Personnel*

A.V. Pherwam, P. Kurkal, D.M. Tripathi, M. Butani

*The P.D. Hinduja National Hospital and Medical Research Centre
Mumbai, Maharashtra, India*

Abstract

Latex allergy has been recognized as a potential medical problem. Health care workers, rubber industry workers and patients with spina bifida are population at risk at work. Latex allergy has been recognized as a potential medical problem because of the increase in frequency and severity of latex-induced reactions. This study investigates latex allergy in our operation theatre personnel (OPT), who are constantly exposed to the latex allergy by way of wearing gloves airborne latex particles and handling other rubber containing articles (12). Seventy-six were OPT operation Theatre Personnel were investigated for latex allergy. A detailed history of symptoms and duration of contact with latex was noted down. Two groups of controls : (i) 100 adults who did not have any history of allergy in the past and (ii) 71 adults from our allergy clinic, who had history of atopy (allergic rhinitis, conjunctivitis, asthma and eczema) and had shown a strong positive skin test to at least 3 out of a panel of 6 allergens including house dust mite, house dust, Cynodon dactylon, Parthenium, cockroach, Penicillium and peanuts. Sensitisation to the latex allergen was determined by SPTs. Fifty percent (38/76) gave positive SPTs: 50% out of these had symptoms of allergy as against only one from those with negative SPTs. The most common atopic symptoms in OPTs were rhinitis (n=9, 23.7%), pruritis (n=8, 21.1 %), cough and dermatitis (n=6, 15.8% each), sneezing, post nasal drip and angioedema (n=3, 8%) each and facial edema, breathlessness, eye irritation and allergy to foods, (n=3, 5.3% each). We had no case of anaphylaxis. Nurses (40%, n=8/20) and ward boys (37.5%, n=6/16) had the maximum sensitization as against surgeons (28%, n=7/25) and anesthetists (13.3%, n=2/15). Ten out of 76 OPTs gave an SPT of less than 2 mm. It would be interesting to follow them up to see if they gave larger reactions with time. Further studies with larger samples are needed to confirm this data.

Key words: latex, food allergy, spina bifida, skin prick tests, anaphylaxis, atopy, health care workers, operation theatre personnel.

INTRODUCTION

There are increasing reports on latex sensitization (1), latex allergy (2,3), latex induced asthma (4) and

anaphylaxis (5,6), in the world literature. In the last few years, latex allergy has been recognized as a potential medical problem because of the increase in frequency and severity of latex-induced reactions (7). Health care workers (8,9,10,11,12), rubber industry workers (13) and patients with spina bifida (14) are populations at risk. Latex allergy has received very little attention in the Indian studies, as evidenced by absence of reports on the subject. We have studied

Corresponding author : Dr. D.M. Tripathi, The P.D. Hinduja National Hospital and Medical Research Centre, Mumbai, Maharashtra.

IJAAI, 2000, XIV (1) p 11-14.

sensitization to latex in our operation theatre personnel (OTP), who are constantly exposed to the latex allergen by way of wearing gloves, airborne latex particles and handling other rubber containing articles (12).

METHODS

Seventy-six OTP were enrolled for the study. A detailed history of symptoms and duration of contact with latex was noted down. Two groups of controls : (i) 100 adults who did not have any history of allergy in the past and (ii) 71 adults from our allergy clinic, who had history of atopy (allergic rhinitis, conjunctivitis, asthma and eczema) and had shown a strong positive skin test to at least 3 out of a panel of 6 allergens including house dust mite, house dust, *Cynodon dactylon*, *Parthenium*, cockroach, *Penicillium* and peanuts.

The Latex allergen was prepared by The Creative Drug Industries for research purposes. The protein content of the latex solution was 12.5 mg/mL. Latex sensitivity was tested by the skin prick test (SPT) method with histamine acid phosphate (10 mg/mL) and glycerinated saline used as positive and negative control respectively. The results were read after 15 mins and a wheal response of more than 2 mm was judged as positive (15). The sensitivity of this test is 92% and the specificity is 100% (16).

RESULTS

Table I gives the list of symptoms in 70 subjects of different categories studied. Table II gives a comparison of SPT positivity in the three groups and Table IV gives the sensitivity amongst the operation theatre staff. Table V gives a comparison of our study with that of others.

DISCUSSION

Among OTP 38/76 (50%) gave a history of symptoms. Similar results were obtained by Brown *et al* in a group of anesthetists (17). The most common symptoms were rhinitis (n=9, 23.7%), pruritis (n=8, 21.1%), cough and dermatitis (n=6, 15.8% each), sneezing, post nasal drip and angioedema (n=3, 8% each) and facial edema, breathlessness, eye irritation and allergy to foods (n=2, 5.3%) each. Food allergy is an important symptom as some of the foods specially

Table I: Symptoms

Symptoms	No.	%
Rhinitis	9	14.6
Pruritis	8	12.9
Sneezing	3	4.8
Post nasal drip	3	4.8
Cough	6	9.6
Contact dermatitis	6	9.6
Breathlessness	2	3.2
Anaphylaxis	3	4.8
Snoring	2	3.2
Mouth breathing	3	4.8
Facial edema	2	3.2
Eye irritation	2	3.2
Headache	2	3.2
Allergy to foods	2	3.2
No symptoms	17	27.4
Total with symptoms	38/76	50.0

Table II: Details of the skin prick tests with latex antigen

Skin test wheal :		>2mm		<2mm	
	n	n	%	n	%
OTP Staff					
Surgeons	25	7	28	7	28
Anesthetists	15	2	13.3	2	13.3
Nurses	20	8	40	5	25.0
Wardboys	16	6	37.5	1	6.3
Total	76	23	30.3	15	13.2
CONTROLS					
Normal	100	1	1.0		
Atopics	71	19	26.8		

OTP = operation theatre personnel

fruits like bananas, peaches, pineapples and grapes have epitopes cross reacting with latex and patients with food allergy are considered as at risk to latex allergy (17). They had a 4% history of allergy to foods compare to 5.3% in our study. We had no case with a history of anaphylaxis. One surgeon who had eczema of the hands was latex negative and was found to be allergic to the soap. The other 38/76 did not have any symptoms of atopy.

Twenty-three out of 76 (30.3%) OPTs had positive SPT of more than 2 mm and 10/76 (13.2%) had positive SPT of less than 2 mm or less. As compared to these, only 1/100 (1%) of normal adult and 19/71 (26.8%) atopic adult control population had SPT above 2 mm. The incidence of urticaria was greater in individuals who had SPT positive > 2 mm, (23/76, 30%) as compared to those with negative SPT (n=6/43, 13.9%). Nine out of 23 (39.1 %) had stage I (itching + urticaria), 11/23 (47.8%) had stage II (stage I + angioedema) and 3/23 (13%) had stage III (stage II + systemic symptoms). The corresponding figures by Turjanmaa (3) are 10%, 40%, 21% respectively and also 10% for stage IV which includes anaphylaxis. We believe that SPT of < 2 mm indicates an early stage of sensitization (Heese *et al* on dental students, (18) and perhaps by avoiding latex exposure can prevent progression to symptomatic disease (19). Also there is some evidence in animal models, of prevention of the progression to symptomatic disease (20).

Nurses 8/20 (40%) and wardboys 6/16 (37.5%) had the maximum sensitization followed by surgeons 7/25 (28%) and anesthetists 2/15 (13.3%). This variation is quite understandable because anesthetists wear gloves for a lesser period of time and surgeons in our hospital have few days a week for surgeries, while nurses and wardboys have daily duties and are at a greater risk for exposure. In the study by Brown (17) *et al* 24% anesthetists had irritant or contact dermatitis Lagier (21) *et al* in a questionnaire survey found that 102/248 (41%) reported problems after wearing gloves. SPTs were positive in 21/102 (10.7%) of these. Various studies (3, 21, 22, 23) have given varying incidence amongst physicians, dentists, surgeons, wardboys, nurses and other health care workers depending on the selection of their data sample.

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