Latex allergy: 'Plight, rights and fights'

Sixteen years after the first report of latex allergy in healthcare workers at Groote Schuur Hospital, Cape Town, in 1997,[1] latex allergy remains an occupational risk and an ongoing challenge for healthcare institutions in South Africa, particularly those that have not yet adopted stringent latex-powdered glove avoidance measures.

Early South African studies found prevalences of latex allergy in healthcare workers of 5% (Red Cross War Memorial Children's Hospital),[2] 20.8% (Tygerberg Hospital)[3] and 9% (Groote Schuur Hospital).[4] Follow-up studies after the implementation of recommended latex avoidance measures, and in particular a 'powder-free' glove policy, found a significant reduction of symptoms in many affected workers,[4] who were able to continue normal employment or to be partially re-deployed, although some very severely affected employees had to be medically boarded. Some hospitals remain heavily contaminated with latex proteins, which have been dispersed in high- and low-risk areas by faulty ventilation or air-conditioning systems.

This issue of *SAMJ* includes a report on healthcare workers with latex allergy and its clinical features in Mankweng Hospital, Limpopo Province, South Africa.[5] The findings of Risenga and colleagues are very similar to the data from 1997 and 2001.[1,2] So little has changed!

Providing a safe environment for employees

An editorial in the *SAMJ* published in 2001[6] stressed the responsibility of the employer to ensure that latex exposure for healthcare workers is reduced to an absolute minimum to prevent both sensitisation and symptoms. Adoption of starch powder-free gloves will reduce 'airborne exposure', which is the most important sensitising route, resulting in conjunctivitis, allergic rhinitis and asthma in the work environment.

Although many state and private medical institutions have implemented a 'powder-free glove policy' in the interests of staff health welfare, this policy has not yet been universally adopted. Nurses form the largest affected group in all surveys, but other healthcare workers, including doctors, physiotherapists, radiographers, cleaners and kitchen staff, are also at significant risk. Some are sensitised by the cutaneous route, directly handling latex materials, and others by working in an environment where powdered gloves are frequently used (e.g. casualty or theatre).

The requirement for powder-free gloves has been a challenge for glove manufacturers and suppliers. In South Africa, gloves should contain less than 50 µg of extractable protein per gram of glove in order to qualify to be purchased on the state tender, in line with other international recommendations, such as in the European Union.

Although this is a fair recommendation to reduce latex exposure (some gloves previously used in South Africa had over 1 000 µg/gram glove), new understanding of the allergens in latex has shown that certain latex proteins, such as Hev b 1, Hev b 5 and Hev b 6.2, appear to be more important in the sensitisation of healthcare workers, whereas Hev b 1 and Hev b 3 are more commonly associated with sensitisation in young infants with spina bifida, and other urological abnormalities.[7]

There has therefore been a move to redefine the extractable proteins in gloves to arrive at new internationally accepted glove specific protein cut-off levels, using determination of other important latex allergen components. Certain components are more water soluble than others and easier to extract during glove manufacturing.

Healthcare workers who are allergic to latex should not use latex gloves at all, even powder-free latex gloves. Alternative gloves such as neoprene or plastic (for non-sterile work) are recommended. Affected workers are still at risk when exposed to a latex glove powdered environment, even in the wards, outpatient departments or corridors of hospitals. For many, latex-free areas of employment (such as re-deployment to administration or nursing education) have had to be offered when hospitals are unable to provide a safe clinical environment, to avoid permanent medical boarding. Unfortunately hospital administrations are often not sufficiently informed about the incapacitating risks of latex gloves to employees and are often 'unsympathetic'. Many also lack understanding of the plight and the rights of affected employees.

Latex-allergic staff therefore often have to fight for their rights. Affected individuals have even had to go to labour unions to rally support in instances of unfair dismissal.

It is important that all sectors of the healthcare service understand that latex allergy is an expensive notifiable occupational disease for healthcare workers in their employ, and that it is indeed the employer's responsibility to provide a latex-safe environment for employees by adhering to recommended guidelines. Atopic individuals entering employment in the healthcare system are at greater risk than non-atopic individuals of becoming sensitised to latex when exposed in the work environment. They need to be informed of this risk.

Clinical assessments

The clinical spectrum of latex allergy in healthcare workers is wide and can be incapacitating (e.g. severe asthma, persistent rhino-conjunctivitis or chronic urticaria) or life-threatening (e.g. anaphylaxis and life-threatening food allergies to cross-reacting fruit allergens such as kiwi, banana, tomato and chestnuts). Latex allergy is also encountered more frequently in children with spina bifida than in other hospitalised children.[7] Sensitisation is usually confirmed by commercial latex allergy skinprick testing or by the Immunocap latex k82 blood latex test (ThermoFisher).

It is important, however, to distinguish between 'sensitisation' and 'clinical allergy' to latex, since not all sensitised individuals are necessarily symptomatic. Specialised latex allergy clinics have been established in some institutions, such as Groote Schuur Hospital and the National Centre for Occupational Diseases, to evaluate sensitised individuals more fully. Recombinant latex allergen testing is also available at private pathology laboratories.

Further evaluation of a healthcare worker sensitised to latex may include assessment of the temporal relationship between exposure and symptoms, a 'glove use test', and assessment of the type of symptoms experienced. For example, conjunctivitis in the work environment is a common manifestation of true latex allergy, whereas rhinitis, being a common disease (20% in the general population), may not necessarily be due to latex, even in latex-sensitised healthcare workers. There are also other causes of 'hand symptoms' in glove users: an irritant contact dermatitis is more common than latex-induced hand dermatitis. Hand contact dermatitis may also be due to other glove additives such as carbamates and thiurams (used in vulcanising of rubber), for which atopy patch tests are required for diagnostic confirmation and specific avoidance or treatment.

The recent availability of nine recombinant latex allergens for laboratory latex allergy testing has opened up wider possibilities for evaluation of sensitisation in latex-allergic patients. Subjects sensitised only to cross-reacting plant profilins (Hev b 9) have a much reduced risk of clinical sensitivity. Certain recombinants have a more

common association with latex allergy to tropical fruits (chitinase latex allergens). When the relationship between latex exposure and symptoms is not clear-cut in a healthcare worker, recombinant allergy testing is therefore extremely useful and important to determine the risk of adverse reactions, to assess the need to adopt strict latex avoidance in the occupational and domestic settings, and to assess prognosis. These tests are also extremely valuable when evaluating non-healthcare workers who present with fruit allergies (e.g. banana or kiwi anaphylaxis) for the presence of concordant latex allergy.

All latex-allergic subjects need to wear a Medic Alert bracelet, as they are at risk of anaphylaxis when undergoing internal medical examinations or surgical or dental procedures when latex gloves are inadvertently used.

Living with latex allergies

Living with latex allergy is not easy. The diagnosis may be missed for years if testing is not done, and individuals have been labelled as 'malingerers' because they so often take sick leave, are 'sick' at work, or are in hospital with chronic rhino-conjunctivitis, which has a significant effect on quality of life due to poor sleep and fatigue, resistant asthma that is difficult to control, or tiredness from abuse of 'over-the-counter' sedating antihistamines in an attempt to control itching and urticaria in the work environment. It is important that staff health clinics, and particularly specialist ENT, dermatology, allergology, occupational medicine and thoracic medicine clinics, consider this diagnosis and investigate specifically for latex allergy when they see workers with these 'allergic' symptoms.

In addition, the significant debilitating effects of latex allergy on normal life must not be underestimated. Rubber products are widely used, not only in the medical environment but in over 20 000 products used in everyday life (e.g. sporting and diving equipment, pacifiers, toys, clothing, vehicles, cosmetics, paints and condoms).

To assist patients, information and education brochures have been produced for affected South Africans (e.g. the ALLSA handbook[8]). However, lists of products that may contain latex, and available alternatives, require constant updating.

A greater understanding of the relative significance of the allergenicity of different antigens within latex has led to the development of vaccines to desensitise and induce tolerance to latex allergens in healthcare workers. Both subcutaneous and sublingual routes using latex extracts have been explored in small studies. Although efficacious, there have been some concerns with safety owing to adverse reactions to the vaccine. It is currently recommended that only specialised centres, experienced in allergen immunotherapy, should consider immunotherapy for very carefully selected, suitable patients, until large studies showing a low risk of serious adverse events have been conducted and published.

The future

Future success in latex immunotherapy may lie in the production of specific recombinant latex vaccines tailored to the profile of specific latex allergen sensitivity, ascertained by detailed recombinant allergy testing, clinical symptoms and risk of daily exposure and ability to avoid inadvertent exposure. The development of safer latex gloves and affordable and effective alternative products is equally important.

Since the first reports of latex allergy in South Africa, there has been progress in the understanding of the antigens involved, and the clinical expression and natural history of the disease; in production of brochures on latex alternatives in the hospital and home environment; in recognition of latex allergy as a notifiable occupational disease, and legislation with respect to 'cut-off values' for state hospital glove purchases; and in component-specific latex allergy tests and the possibility of new vaccines to desensitise the allergic patient.

However, it is important that the plight of patients already sensitised should be better understood by their healthcare providers, hospital administrations, line managers and colleagues. Strict latex avoidance is the key to management, in addition to support and clinical treatment of symptoms. Furthermore, the affected individual must be clearly informed of his or her rights in terms of the onus of the employer to provide a safe working environment and the right to compensation from the Commissioner for Occupational Diseases in certain instances.

P C Potter
Division of Allergology and Immunology, Department of Medicine, Groote Schuur Hospital, Cape Town, South Africa

Corresponding author: *P C Potter (paul.potter@uct.ac.za)*

1. Marais G, Fletcher J, Potter PC. *In vivo* and *in vitro* diagnosis of latex allergy at Groote Schuur Hospital. S Afr Med J 1997;87(8):1004-1008.
2. Braithwaite N, Motala C, Schinkel M, Toerien A, Potter PC. Latex allergy at Red Cross Hospital. S Afr Med J 2001;91(9):750-751.
3. De Beer C, Cilliers J, Truter EJ, Potter PC. Latex gloves: More harm than good. Med Technol SA 1999;13(1):282-288.
4. Potter PC, Crombie I, Marian A, Kosheva O, Schinkel M. Latex allergy at Groote Schuur Hospital: Prevalence, clinical features and outcome. S Afr Med J 2001;91(9):760-765.
5. Risenga SM, Shivambu GP, Rakgole MP, et al. Latex allergy and its clinical features among healthcare workers at Mankweng Hospital, Limpopo Province, South Africa. S Afr Med J 2013;103(4):390-394. [http://dx.doi.org/10.7196/SAMJ.6011]
6. Potter PC. Latex allergy – time to adopt a powder-free policy nationwide. S Afr Med J 2001;9(9):746-748.
7. Johar A, Lim D, Mad Arif S, et al. Low prevalence of latex sensitivity in South African spina bifida children. Paediatric Allergy and Clinical Immunology 2005;16(2):165-170. [http://dx.doi.org/10.111/j.1399-1038.2005.0022.x]
8. Potter PC, Foot L. Latex allergy. In: Green R, Motala C, Potter PC, eds. Handbook of Allergy. 3rd ed. Cape Town: Allergy Society of South Africa, 2010:147-161.

S Afr Med J 2013;103(6):369-370. DOI:10.7196/SAMJ.7015