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Latex Allergy and Its Prevention Strategies - A Review of Literature

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Abstract: ***Latex allergy has been reported frequently in last few years. Dental surgeons, dental students and other healthcare providers appear to be at risk of latex allergy in spite of the fact that the present situation warrants the use of protective gloves. Latex allergy affects about 1% of the general population. Since it has been shown that more frequent cause for development of these reactions is exposure to latex, several measures have been implemented to reduce the prevalence of latex allergy and thus potentially dangerous reactions associated, especially in the high-risk population. This review of the literature seeks to expose the relevant basic concepts about allergic reactions to latex and its prevention strategies.***

Keywords: Latex, allergic reactions, prevention strategies.

1. Introduction

Latex is a natural substance that comes from the sap of the rubber tree. It is a material widely used in the manufacture of domestic, industrial and especially medical products. The prevalence of latex allergy in the general population is estimated between 0.8 and 6.5%, and the repeated exposure to this material is the most significant risk factor for its development.[1]

Latex is the milky sap fern the Hevea brasiliensis tree and is widely used in medical appliances and consumables. The use of latex products, especially latex gloves by healthcare workers, has increased, largely due to concerns about blood - borne infections[2].

Between 1989 and 1993 a total of 259 patients were diagnosed as having an allergy to latex gloves[3].

Pathogenesis:
Allergic reactions to latex consist of immediate - type hypersensitivity reaction and delayed - type hypersensitivity reaction.

Immediate type hypersensitivity reactions occur within minutes of exposure to latex products and are mediated by IgE to various latex proteins. Delayed type hypersensitivity reaction is a cell mediated immune reaction in the skin that usually results from a hypersensitivity to one of the numerous chemicals added during processing (*Von Hintzenstern etr al. 1991; Wyss et al. 1993*)[4].

Patients with delayed type hypersensitivity reactions are at greater risk of developing immediate reactions due to skin breakdown and resultant increased exposure to natural rubber latex (NRL) (*Charous et al. 1994; Turjanmaa 1994).* Delayed type reactions and immediate type reactions can also occur concurrently *(Fuchs and Wahl 1992)*[4].

Clinical features
Latex related urticaria was described by nutler. Severe IgE mediated reactions to latex appear in the course of surgical manipulations or roentgenologic explorations as a result of the direct contact with latex. These lesions may be life threatening and they often are the first symptom in sensitized patients[5].

The main symptoms of immediate reactions are urticaria and oedema, but if mucous membranes are affected then asthma, nasal congestion or conjunctivitis may occur. Rarely anaphylaxis may result, especially if the latex protein comes into contact with broken skin or mucous membranes[6].

The symptom of delayed hypersensitivity is allergic contact dermatitis of skin and is characterized by an erythematous or itching rash on the back of the hands. Vesicles or blisters may develop in severe reactions[6].

It is possible to describe three types of allergic reactions to latex:

Irritant contact dermatitis
It is the most common type of allergic reaction. Can develop within minutes or hours after exposure, due to mechanical or chemical skin irritation by the components used in the product manufacturing process [3]. Clinically it is characterized to present as pruritus, rash, scaling, burning sensation, inflammation or blistering [8]. No previous sensitization is necessary for the development of dermatitis, but this condition facilitates the progress of an immunologically mediated hypersensitivity reaction, because the lost of skin integrity favors the direct exposure to allergens.

Allergic contact dermatitis or type IV hypersensitivity reaction:
Reaction mediated by cellular immunity. It occurs between 6 and 48hours after contact with latex, but is usually produced by other allergens from the chemicals used in the production process. T lymphocytes are sensitized and infiltrate the contact zone on the skin. The symptoms are similar to those of irritative contact dermatitis (erythema, vesicles and desquamation) and do not require a history of previous contact to manifest itself.

Type I hypersensitivity reaction:
It occurs after minutes of exposure, either by the cutaneous, mucosal or aerial route. It requires prior sensitization with

latex proteins and production of IgE antibodies. Clinically, it can present as a localized urticaria to a frank anaphylactic reaction. Moderate reactions include rhinitis and conjunctivitis, and are more likely to occur due air exposure or skin contact.

Eighty percent of the reactions associated to latex correspond to contact dermatitis or type IV hypersensitive and occur mainly in response to chemicals used in the manufacture of these products. Only type I hypersensitivity corresponds to a response to proteins in the latex. This reaction is less frequent but can generate large complications and life threatening.[1]

Tests for allergy

It includes a skin test in which an aqueous extract of the rubber latex can be scratched or pricked into the akin and the resulting erythema and weal can be compared with control agents. Otherwise, a patch tests are performed these involve a two day occlusion of the test material to infect skin and response is noted after 48-72 hrs. it could lead to sensitivity in previously non-sensitized is free of complication and a simple blood test can detect specific latex IgE in allergic individuals[6].

Prevention

The two main prevention strategies are:

Use of latex free gloves

There is important evidence that latex gloves are the main source of allergens in health care settings. These have been the most popular given their characteristics, which include strength, elasticity and superior protection qualities. It has been shown that the level of aeroallergens in the environment is strongly correlated with the use of gloves with high content of allergens and dust, total number of gloves used and hours of activity in the environment. Studies have shown that changing gloves with high dust content by gloves with low amounts or dust-free (which are low in proteins and allergens) results in a significant reduction of aeroallergens and a dramatic decrease in the incidence of latex allergy.

It has also been reported that after removing latex gloves at work sites, the levels of aeroallergens are reduced to undetectable levels after 24hrs. Concern about latex allergy has led to alternatives such as polyvinyl chloride (PVC) gloves or nitrile gloves. It seems to be that PVC gloves filter more than latex gloves (63% filtration in PVC gloves, versus 7% latex gloves), but on the other hand nitrile gloves have shown a better performance than those of PVC. Unfortunately routine use has received some resistance and latex gloves continue to be a cheap alternative, offering appropriate protection and other essential qualities for safe and effective performance.[1]

Use of non latex products or cotton liners is advocated to such latex allergic individuals. Hence prophylactic measures essential either to avoid or to obtain an early diagnosis of a latex allergy.

- Use powder free gloves as a standard practice.
- Take skin care measures, (minimal contact I moisture, use appropriate skin creams)
- For known high risk personal provide low protein and if possible latex-free gloves, other clothing and equipment.
- For patients with type IV allergy minimize contact with thiurams, dithiocarbamate and/or benzothiazole.[2,3]

References

[1] **Vargas A, Foncea C, Astorga P**. Latex Allergy: Overview and Recommendations for the Perioperative Management of High-Risk Patients. J Head Neck Spine Surg. 2017; 1(1): 555552

[2] **Manori Amarasekera, Nadeeka Rathnamalala, Savithri Samaraweera and Maheshika Jinadasa**. Prevalence of latex allergy among health care workers. *International journal of occupational medicine and environmental health. 2010; 23 (4): 391-396.*

[3] **Heese A.** Type I and IV latex allergies. Allergic to latex gloves, actual trend, risk factors, and methods of prevention. *Allergologie 1995; 18 (9): 358-365.*

[4] **Sania Amr and Mary E. Bollinger**. Latex allergy and occupational asthma in health care workers: adverse outcomes. *Environ Health Perspect 2004; 112: 378-381.*

[5] **Angel Mazon, Antonio Nieto, Francisco Estornell, Alicia Nieto, Carlos Reig and Fernando Garcia-Ibarra** . Factors that influence the presence of symptoms caused by latex allergy in children with spina bifida. *J Allergy Clin Immunol. 1997; 97: 600-604.*

[6] **A sinha, P.V. Harrison**. Latex glove allergy among hospital employees: a sudy in the north-west of England. *Occup.Med 1998; 48: 405-410.*

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