

HYPERSENSITIVITY TO LATEX: A LITERATURE REVIEW ABOUT THE RISK FACTORS AND THEIR CLINICAL MANIFESTATIONS

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ABSTRACT

The prevalence of hypersensitivity to latex in health professionals, more specifically dentists. A bibliographic survey was carried out from December 2018 to March 2019 in the Bireme database. The literature has indicated that among the clinical manifestations that occur after a few minutes in contact with latex proteins, they include urticaria, angioedema, conjunctivitis, allergic rhinitis, asthma and anaphylaxis. Although skin lesions are often due to a latex allergy, studies have indicated that, on average, only 5% of dental workers are actually allergic to latex. Among these 66% complained of erythema and dryness, 96% located in the hands and fingers. Although it is little studied, it was noticed that the allergy to the latex covers several professionals of the health to be present not only in the gloves, but also in diverse materials used in the day to day clinical and surgical.

KEYWORDS: Allergy, látex, health professionals.

1. INTRODUCTION

Latex allergy emerged as an epidemic of anaphylaxis, occupational asthma, and clinical dilemmas in the 1980s. Nonetheless, a systematic and investigative recognition that touches the epidemiology and strategy of preventing such hypersensitivity should be elaborated. International attention and collaborations of researchers, government agencies, and health policies have resulted in the near elimination of a global epidemic¹.

Patients with allergy to natural rubber latex mediated by IgE are sensitized by proteins contained in natural rubber and are willing to several immediate allergic reactions after exposure to rubber products. Health professionals are mainly known as populations at risk of allergy to latex^{2,3}.

Nienhaus *et al.* (2008)⁴ addressed the effect of interventions for patients with occupational allergy and, when contact with latex is avoided, health-related

quality of life and work activity improve.

Similar results were found by Power *et al.* (2010)⁵, who detected improvement in health-related quality of life in 39 healthcare workers with latex allergy after avoiding exposure with the aforementioned material.

The objective of this study is to elucidate the risk factors for latex hypersensitivity, as well as to demonstrate the importance of preventing occupational exposure by exploring the effect of interventions for patients with occupational allergy.

2. MATERIAL AND METHODS

This study was conducted through periodicals and virtual articles via PubMed and Scientific Electronic Library Online (SciELO).

For the PubMed search, we used the terms indexed in the Medical Subject Heading Terms (MeSH) developed by the US National Library of Medicine which is used as a method of vocabulary control for both abstracts present in the Medline database and for those present only in PubMed. The terms used were: latex anaphylaxis, latex allergy and natural rubber.

The search in the Brazilian database, SciELO (Scientific Electronic Library Online - Brazil) did not have control of vocabulary, requiring that the search be done using the terms already employed through a simple search in all indexes. The keywords used were: hypersensitivity, latex, health professionals, adverse effects and anaphylaxis.

In all, the search resulted in the use of 3 books and 30 studies, comprising the period from 1993 to 2018, and 8 studies were excluded from this study because they were incompatible with the terms researched..

3. LITERATURE REVIEW

Hypersensitivity was defined as "an allergic reaction to a drug or other stimulus"; or, "A

qualitatively normal response occurring at a lower dose or lower concentration of the drug than usual"⁶.

Anaphylactic reactions may be associated with IgE production (IgE-mediated anaphylactic reactions) or may occur by direct stimulation of mast cells, T-cells, basophils, or polymorphonuclear leukocytes - eosinophils, the latter, previously called anaphylactoid leukocytes⁷.

During the 1980s and 1990s, the risk of sensitization to latex became a calamity for health professionals, especially^{8,9}, reaching a prevalence of 2.8% 17% among them^{10,11}. In sensitized patients, exposure to latex proteins causes a type I IgE-mediated hypersensitivity reaction, involving various organs and systems, and type IV provides a response responsible for contact dermatitis¹¹.

Among the clinical manifestations that occur after a few minutes in contact with latex proteins, they include urticaria, angioedema, conjunctivitis, allergic rhinitis, asthma and anaphylaxis¹².

The clinical manifestations of latex allergy in health professionals were unique. Most were found to have irritation or contact dermatitis when they wore gloves, the symptomatology of which is 11 times more frequent than those who did not present dermatitis¹³.

Occupational anaphylaxis has become more prominent through the recognition that such condition may occur in occupational contexts. Among occupational agents, latex has gained prominence in recent years, especially among health professionals, because of the severity of reactions¹⁴.

Although skin lesions are often due to a latex allergy, studies have indicated that only 4-6% of dental workers are actually allergic to latex^{15,16}.

As reported in previous studies¹⁵, the clinical pictures of these workers were mostly erythema and dryness (66%), while the locations were predominantly in the hands and fingers (96%).

According to Minamoto *et al.* (2016)¹⁷, 46.4% of dental workers reported a history of chronic life eczema, which was commonly related to a history of current illness, allergic asthma / rhinitis, dry skin, 10 times / day).

Based on previously published studies, it may be noted that the reduction or even the prohibition of latex powder gloves in some countries, the production of latex gloves with low allergen content, and public health campaigns at the turn of the millennium resulted in a significant decline in latex allergy^{1,18}.

Moreover, most dental workers today diagnosed as having latex allergies have acquired their sensitization back in the days when latex powder gloves were used frequently^{18,19}.

4. DISCUSSION

Latex is a product very present in the daily life of the health professional, however since 1933 cases of hypersensitivity have been reported with the use of gloves that contain latex-based rubber or even powder that in contact with proteins present in the latex spreads

the substance through the air, functioning as an aerosol. Latex is nothing more than a sap extracted from the rubber tree (*Hevea brasiliensis*) of Amazonian origin and has in its composition polyisoprene, lipids, phospholipids and proteins, which is probably the antigenic factor²⁰.

The first reports of allergy and hypersensitivity to latex were dated according to the literature in 1933 in anesthesiologists, but with the establishment of universal protection measures, new rules of biosafety, prevention of diseases and mandatory use of PPE in professionals of the area of health cases increased rapidly, and in 1989 the first cases that led to death appeared²¹.

According to Allarcon *et al.* (2003)²¹, exposure and sensitization may result from contact with the skin and mucous membranes, from inhalation, ingestion, parenteral injection or wound inoculation, with latex gloves being one of the main allergenic factors among health professionals.

Epidemics are often recognized for the first time by astute clinicians who recognize a new constellation of signs and symptoms of patients that are not explained by known exposures or vectors. The resolution of latex allergy represents a remarkable collaboration of clinicians, researchers, manufacturers, the Centers for Disease Control and Prevention, the National Institute of Occupational Safety and Health (NIOSH), and the Food and Drug Administration to control an epidemic¹.

It is understood that prolonged absence of contact with an allergen may result in a gradual decrease in specific IgE levels, to the extent that both in vitro and in vivo diagnostic tests will be negative on first reexposure. However, it is also well known that re-exposure during in-vivo diagnostic procedures certainly elicits an immune response by B-cell memory which leads to measurable re-sensitization status after a few weeks²².

Effective management of patients with latex allergy begins with the correct diagnosis. To detect antigens for NRL, different diagnostic methods are being employed. In addition to a patient's medical history and physical examination, skin tests and specific IgE detection for the latex antigens in the patient's serum are performed. However, the cutaneous test is still poorly used and potentially life-threatening due to possible anaphylactic reactions⁸.

The sensitivity of IgE detection to latex has been addressed by several authors with results in the range of 35-76%, but with high. Skin testing with multiple sources of latex proteins proved to have a high sensitivity in the diagnosis of latex allergy. However, allergists abandoned this method due to a lack of FDA approved products and anaphylactic reactions to test the glove extract⁸.

The preventive approach allows health professionals to avoid certain cases that may be fatal to the allergic patient, such as: knowing which patients are at risk, anamnesis and IgE screening, to adapt the surgical environment to the patient²³. In cases where the

professional is allergic, opt for materials that do not contain latex in their composition.

5. CONCLUSION

The literature consulted shows that, although there is little incidence of latex-sensitive patients, relative to health professionals and patients directly in contact with this material, it is a serious problem that requires intervention.

Reactions may range from hypersensitivity to a fatality grade of anaphylaxis. Measures to prevent these groups at risk should be avoided exposure to latex, promoting suitability at work, the use of gloves with low protein content, synthetic gloves, avoiding irreparable damage to the health of professionals.

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