Clinical Perils: Latex Allergy

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OVERVIEW
Allergy to natural rubber latex is a growing concern for both healthcare workers and patients. Latex is composed of a variety of potentially irritating proteins and is used in many healthcare products, including gloves and catheters. Sensitivity to natural rubber latex affects an estimated 17% of healthcare workers but repeated exposure may increase this affliction. Also, 1% lethality occurs due to immediate Type I systemic reaction anaphylaxis, which can cause shock and permanent lung injury. In addition, litigation and compensation for patient injury places healthcare workers in a significant risk level to recognize these afflictions. A reasonable level of suspicion should alert healthcare workers to latex allergy: any patient allergic to tropical fruits (avocados, kiwis), bananas, chestnuts, and poinsettias may have serious latex allergy. Also, a history of multiple surgeries in pediatric Spina Bifida patients is an independent factor to natural rubber latex allergy. However, the best protective course is the elimination from the environment in a clinical setting. Therefore, latex free patient rooms, emergency rooms, and operating rooms have been instituted.

TYPES AND STAGES OF LATEX ALLERGY
Latex allergy, or hypersensitivity, occurs when the body’s immune system reacts to proteins found in natural rubber latex. A Type I systemic reaction is an immediate hypersensitivity reaction moderated by the development of IgE antibodies to specific proteins in latex, causing a serious and potentially lethal event. Type I conditions are characterized by 5 stages:

Stage 1 – Local urticaria in the area of contact
Stage 2 – Generalized urticaria with angioedema
Stage 3 – Urticaria with asthma, eye or nose itching and gastrointestinal symptoms
Stage 4 – Urticaria, anaphylaxis, and shock
Stage 5 – Chronic asthma and permanent lung damage

Type IV latex reactions are less immediate and severe. These T-cell mediated, delayed response reactions typically occur 48 to 96 hours after exposure and are limited to redness and itching in the area of contact and various skin lesions at the exposure site. Repeated exposures to latex may decrease tolerance and increase the likelihood of a Type I reaction.

PREVALENCE AND UBICITY OF NATURAL RUBBER LATEX ALLERGY
A recent study of anti-latex IgE antibodies in blood donors has shown that the prevalence of latex sensitivity may be as high as 6-12% or up to 37 million people in the United States. Once sensitized, most individuals are asymptomatic and unaware of their antibody status; therefore, clinicians cannot assume that any patient is free of latex allergy. Healthcare workers must be vigilant with latex products since history alone is inadequate to identify all patients at risk. Also, points of entry occur through dermal contact (irritant contact dermatitis) and inhalation (latex glove powder). A partial list of products which may have latex include:

- Examination and surgical gloves
- Monitoring catheters (PAC)
- Urinary catheters
- Oral and nasal airways
- Endotracheal tubes
- Intravenous tubing
- Injection ports
- Bungs and needle sheaths
- Wound drains
- Anesthesia masks
- Syringes
- Tourniquets
- Stethoscopes
- BP cuffs
- Enema cuffs
CLINICAL IMPACT OF LATEX HYPERSENSITIVITY

Months or even years of exposure without symptoms may precede the onset of clinical symptoms of a Type I latex reaction. Serious consequences can occur in clinical settings such as what occurred in the following case report:

A pulmonary artery catheter was used in a 63-yr-old patient undergoing surgical resection of an 11mm abdominal aortic aneurysm. After insertion of radial artery and pulmonary artery catheters and prior to induction of anesthesia, the anesthesiologist noted that the patient experienced a significant decrease in systolic arterial blood pressure from 120 to 70 mmHg. Surgery was postponed to the following day in spite of the risk of rupture of the aneurysm, to identify the cause of this apparent systemic allergic reaction. On the second day the PA catheter was inserted when the patient immediately complained of dyspnea, the SaO₂ decreased from 93% to 79%, and pulmonary auscultation revealed bronchospasm. Tracheal intubation was performed, the patient was treated with phenylephrine and epinephrine, and crystalloids were used for volume expansion to restore hemodynamic status. This patient had not reported any previous history of sensitivity to latex. This and other reported cases suggest that latex allergy should be considered in any suspicious case presenting with these symptoms during surgery.

LATEX ALLERGY: POTENTIAL COST TO THE HOSPITAL AND THE CLINICIAN

The costs of latex allergies occur in three areas: 1) to defend litigation, 2) financial judgment when a patient is injured due to latex exposure, 3) to compensate healthcare workers who have developed latex hypersensitivity due to repeated exposure to latex products during employment.

In 1999, Phillips et al. reported on a study comparing latex-safe environments vs. the status quo in three healthcare institutions in Georgia, USA. These institutions included a tertiary care hospital, a community hospital, and an outpatient internal medicine clinic. The cost of the worker with total disability due to latex hypersensitivity as a result of repeated exposure to latex was calculated as $109,000, where the worker qualified as totally disabled and received two thirds of the average weekly wage for 400 weeks. The cost of the worker classified as partially disabled was calculated at $62,000 in which the worker received wage replacement equal to two-thirds of their average weekly wage for 350 weeks. In a population where as many as 17% of health care workers have some degree of latex sensitivity, compensation for loss of wages can represent a substantial financial risk for hospitals.

CONCLUSION

In recent decades, increasing clinical attention to the risks associated with the use of latex products has resulted in latex-free rooms in hospitals. This effort is not an adequate solution and will not eliminate the problem until latex products are completely removed from clinical settings. The implementation of completely latex-free clinical environments may not be possible until the financial impact on the responsible parties is reduced. The potential for banning latex products relies on expanding global awareness of the dangers of latex allergies. In the meantime, it would behoove all clinicians to safeguard their patients by avoiding use of all-latex products.
References
