



CLINICAL PERILS: LATEX ALLERGY

Paul A Gibilisco, MD, FACP, FACR

Abstract

Since my first encounter with latex allergy 30 years ago in a respiratory therapist, my respect for such patients is paramount.²³ Latex gloves^{2,4} and indwelling catheters¹ are among the index causes. Sensitivity to natural rubber latex affects an estimated 17% of healthcare workers but repeated exposure may increase this affliction. Also, 1% lethality⁸ 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 poinsettias¹⁹⁻²², 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^{17,18}. However, the best protective course is the elimination from the environment in a clinical setting. Therefore, latex free patients' rooms, emergency rooms, and operating rooms have been instituted¹⁶.

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 (2)

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 site². Repeated exposures to latex may decrease tolerance and increase the likelihood of a Type I reaction³.

Prevalence and Ubiquity of Natural Rubber Latex Allergy

A recent study of antilatax IgE antibodies in blood donors has shown that the prevalence of latex sensitivity may be as high as 6-12%⁴ or up to 37 million people in the United States.⁵ Once sensitized, most individuals are asymptomatic and unaware of their antibody status^{4,6}; therefore, clinicians cannot assume that any patient is free of latex allergy. Healthcare workers must be vigilant of latex products since history alone is inadequate to identify all patients at risk⁷. Also, points of entry occur through dermal contact (irritant contact dermatitis) and inhalation (latex glove powder)¹⁶. A partial list of products which may have latex include:

- Examination and surgical gloves

- Monitoring catheters (PAC)⁹
- 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 cuffs¹⁶

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 latex⁹. This and other reported cases suggest that latex allergy should be considered in any suspicious case presenting with these symptoms during surgery¹⁰.

Latex Allergy: Potential Cost to the Hospital and the Clinician

These costs occur in three areas: 1) to defend litigation, 2) financial judgement 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 al¹¹ 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 weeks¹¹. 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.

Physicians, nurses and hospitals can be held financially liable for injury sustained by a patient due to latex exposure and reaction. In *Dunwoody vs Daniels*¹² in which Emory Hospital inserted a latex catheter into the patient causing a subsequent latex reaction, the Georgia Appellate Court found that "Emory breached the standard of care by using a latex catheter"¹². The American Medical Association reported in 2005 that while physicians prevail at trial in 83% of (malpractice) cases against them, the average cost of obtaining a defense verdict is nearly \$94,000¹³. Moreover, the median medical liability jury award in medical liability claims increased in 2004 to \$439,000¹⁴. According to one study of 186 plaintiff's verdicts in California, Florida, and Texas, juries awarded punitive damages with an

average award in those cases of \$22.6 million each¹⁵.

Conclusion

Since the first report of immediate hypersensitivity with enema cuffs¹⁶, and subsequent case of latex allergy due to latex gloves and latex syringe plungers in a respiratory therapist²³ over 30 years ago clinical attention to this problem has resulted in latex free rooms in hospitals¹⁶. This is clearly not enough to eliminate the problem until complete elimination of latex products occurs in clinical settings. As often occurs in the USA, the ideal situation of a complete latex free clinical environment may not be possible until the financial impact does not hurt the pockets of the responsible parties. It is hoped that reason will prevail as latex allergy is a global problem and that latex products will be banned. Meanwhile, it would behoove all clinicians to refuse to use all latex products and safeguard their patients.

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