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Latex allergy, past, present and future

Jordan N. Fink (Medical College of Wisconsin, Milwaukee, U.S.A.)

Latex (natural rubber latex) has been used in medical and non-medical devices for over 100 years. Latex gloves, developed in the late 1800s revolutionized surgery and sterility. In the 1980’s universal precautions were developed to provide protection from blood or secretion borne infectious agents and expanded the use of examination gloves multi-fold with over 20 billion pairs of gloves sold in the US in 1999.

Shortly after latex glove usage began in the medical field, contact dermatitis was described and was associated with chemicals used in latex glove vulcanizing. It was not until the late1990s that IgE mediated reactions including urticaria, rhinitis, asthma and anaphylaxis were associated with the increased latex glove usage. Three distinct groups of individuals were determined to be at risk: patients with spina bifida who underwent multiple surgical procedures, patients undergoing radiologic procedures utilizing latex barium enema retention balloons and health care and other workers using latex gloves frequently in their daily work activities.

Latex is derived from the rubber tree *Hevea Brasilienis* tapped for its sap which consists largely of substances acting as defense molecules to heal wounds and ward off infections agents. The water-soluble and membrane proteins of the sap may be up to 240 in number and many may be highly allergenic. A number of these proteins perhaps 50 of the 240 can be inhaled in glove powder or absorbed through the occluded skin under gloves and induce IgE mediated allergic mechanisms. To date, 13 such proteins have been isolated and characterized and it has been demonstrated that between 6 and 10% of health care workers and up to 70% of spina bifida patients develop allergic responses to these antigens.

The clinical responses to latex have best been characterized in health care workers. Contact dermatitis may occur first, followed by typical IgE mediated reactions including anaphylaxis. Skin testing or RAST/ELISA evaluation can detect latex specific IgE in up to 75% of such patients. The lack of tests available for additional relevant antigens likely makes up the remaining 20–25 percent. Asthma induced by latex may be mild to severe and incapacitating. It may persist even after avoidance of latex devices is carried out. This suggests that airway inflammation and/or remodeling induced by the immune inflammatory response to latex may be irreversible. Thus, the treatment is aimed at early diagnosis, suppression of the allergic response and avoidance. It is clear that latex allergy may induce permanent respiratory disease. Avoidance remains the mainstay of therapy.

Recently, the use of low or no powdered gloves and the availability of non-latex gloves with the same properties as latex has resulted in a decrease in latex allergic responses. It would be hoped that this epidemic in health care workers can ultimately be completely controlled.