



## *Latex allergies*

*By Teresa Muterspaw, MS, CPNP*

July/August 2010

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### **CASE STUDY:**

Greta, a 12-year-old female, presents to the operating room for routine intrathecal chemotherapy treatment after relapse of a spinal cord tumor. Previous surgeries include infusaport insertion and partial tumor resection of lower spinal cord resulting in paralysis of the bladder. Greta catheterizes her

bladder four to six times a day with a rubber urinary catheter.

The day of surgery Greta is placed under general anesthesia and positioned. Once under anesthesia, the anesthesiologist begins to notice subtle heart rate and blood pressure changes, a hive like rash and wheezes

bilaterally. After intubation, it became increasingly difficult for the anesthesiologist to give Greta breaths with the respirator bag. The procedure is immediately stopped and Greta is transported to the intensive care unit for treatment of an anaphylactic latex allergy.

### **CASE DISCUSSION**

#### **BACKGROUND**

Latex has been used since the 1600s BC. Natural rubber latex comes from the rubber tree in South America and Central America.

Latex is the milky fluid extracted from the rubber tree and contains proteins for healthy plant growth and rubber hydrocarbons that provide elasticity in latex products. The residual protein substance causes allergic reactions to latex.

Latex use in the medical field began in the 1800s as latex gloves decreased infections. In 1927 the first allergic reaction to latex was found in the adult population. A reaction began after a dental exposure as well as one after inhalation fumes from a rubber coated electric cable.

As result of the emerging AIDS epidemic in the 1980s, the Centers for Disease Control and Prevention (CDC) began recommendations for universal precautions including the use of gloves for all healthcare workers.

Most the theses gloves were latex due to affordability. In 1989 the first pediatric latex allergic reaction was documented. Today data shows latex allergies occur in one to six percent of pediatric populations.

A latex reaction may occur through inhalation, mucosa contact or intravenous contact with rubber products. Reactions begin with an initial exposure that sensitizes plasma cell immunoglobulin (IgE). Repeated exposure to latex protein causes a large scale inflammatory reaction in body tissue. Cells rupture and cause edema and tissue swelling thus causing decreased blood pressure, increased heart rate, rash and wheezing.

#### **TYPES OF LATEX ALLERGIES**

**Irritant reactions** are the most common latex reactions and are considered nonallergic conditions with quickly reversible effects. Latex irritant reactions may result from latex glove exposure and

may present as a dry, itchy rash on the back of the hands.

**Delayed type hypersensitivity (Type IV)** is considered an allergic contact dermatitis and can last for weeks after exposure. It is rarely associated with systemic signs and symptoms. A person is at greater risk of developing immediate reactions due to skin breakdown and repeat exposures to natural latex rubber. These types of reactions can be delayed for months or years.

Immediate type hypersensitivity (Type I) varies in presentation from contact urticaria to systemic anaphylaxis and laryngeal edema that require immediate life-saving measures. This type of latex reaction is considered anaphylaxis. The effects of this allergic reaction occur within minutes of exposure to latex. Symptoms include contact urticaria of skin, and with aerosolized latex include wheezing, rhinitis, conjunctivitis and anaphylaxis.

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These most serious reactions are mediated by IgE response to various latex proteins. Inhalation exposures in highly sensitive persons and intravenous exposures have lead to very serious reactions similar to immediate drug reactions or stinging insect venom and can proceed to death.

Currently, most surgical procedures take into consideration the potential effects of latex allergy reactions. Latex has been removed from most surgical areas. However, latex is often found daily in the medical environment. To determine if an individual has a latex allergy, clinical histories are the most important screening tools. In addition, a radioallergosorbent test (RAST) detects latex specific immunoglobulin E in blood.

Some populations that are treated

as latex allergy or precautions include known or suspected allergic reaction, positive skin test, positive IgE antibodies to latex, neural tube defects (such as myelomeningoceles, meningoceles, spina bifida) and reactions to rubber products such as balloons or bottle nipples, unexplained anaphylaxis reactions such as during surgery, dental procedures, x-rays, urinary cauterizations, rectal or vaginal exams, and patients who have had multiple genital urinary tract procedures or abnormalities. Some fruits share similar plant protein antigens as natural rubber latex making it possible for 50 percent of these persons to react to latex. Caregivers should always be aware of possible latex reactions. When necessary, suggest further testing for latex allergy.

## **LATEX CONTAINING PRODUCTS**

Some common latest containing products include dishwashing gloves, balloons, carpeting, waistbands on clothing, rubber toys, hot water bottles, baby bottle nipples, disposable diapers, sanitary pads, rubber bands, erasers, condoms, diaphragms, swim goggles, racket handles, motorcycle and bicycle hand grips, blood pressure cuffs, stethoscopes, intravenous tubing, syringes, respirators, electrode pads, surgical masks, rubber catheters, some sterile gloves, and medication vial tops.

## **FEATURED NURSE SPECIALIST**



**TERESA MUTER-SPAW, MS, CPNP,** has been a pediatric nurse practitioner in the surgical services division

at Dayton Children's for six years and has been a registered nurse for 24 years. She graduated from

Wright State University with a degree in nursing and a master's degree in child and adolescent health. Teresa received the 2009 Nursing Excellence Award and is adjunct faculty at Wright State University.

### ***Surgical Services at Dayton Children's***

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from birth through age 21. The staff includes specialized pediatric nurses, pediatric anesthesiologists and surgeons, and other staff trained in pediatrics. Surgical services performs more than 12,000 surgical procedures every year and provides presurgery tours for kids and their families prior to surgery. For more information, call 937-641-5848.



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