

Anaphylaxis to latex in intravenous fluids

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Intraoperative and other anaphylactic reactions to latex have been well described.¹ The cases that have occurred during surgery have been assumed to be due to an allergy to the latex gloves of the surgical team.² Other reported cases of latex allergy occurring in a medical setting include contact with the rubber balloon used to administer barium enemas, contact with the catheter during bladder catheterization, contact with ostomy bags, and contact with rubber gloves during dental procedures.^{1, 3} The following case documents a latex anaphylactic reaction believed to be secondary to trace amounts of latex in ordinary intravenous tubing and bottles. Because intravenous fluid administration is so common, allergic reactions in this setting have the potential for major medical difficulties.

CASE HISTORY

D.D. is a 32-year-old operating room nurse who had a systemic reaction before she underwent a surgical procedure. She has known latex sensitivity, as manifested by the development of hives when she comes into contact with latex gloves at work and by an episode of wheezing while having dental work done by a dentist who was wearing gloves. She was admitted to the hospital for an elective surgical procedure. Before the surgery an intravenous infusion of Ringer's lactate solution was started, with lidocaine for local anesthesia. Within seconds of the start of the infusion she experienced emesis, facial flushing, hypotension, chest tightness, wheezing, and syncope. Treatment with epinephrine, diphenhydramine, and ranitidine; a change of the intravenous solution; and administration of corticosteroids eventually reversed the process, and she made an uneventful recovery.

Evaluation

The patient was evaluated on four separate occasions. During an initial office visit she was skin-tested with 1% lidocaine, with preservative, without epinephrine. She was then injected with 0.1 ml of undiluted 1% lidocaine. No reactions were observed. She was brought

to the hospital recovery room for further testing. Skin injection with 0.1 ml of Ringer's lactate solution caused no reaction. An intravenous infusion with normal saline solution was started; 1% lidocaine was used for skin anesthesia. Within 3 to 4 minutes she experienced generalized flushing, cough, wheezing, conjunctival injection, and generalized itching. There was no drop in blood pressure. She was treated with epinephrine, antihistamines, and corticosteroids; recovery occurred after about 4 hours of therapy. We now wondered whether lidocaine in the larger dose used for skin anesthesia could have been the responsible agent. An intravenous line with normal saline solution was started without use of a local anesthetic. A similar type of systemic reaction occurred. Again she recovered after prompt symptomatic treatment. A RAST to latex (Pharmacia latex RAST disc [Pharmacia, Uppsala, Sweden], modified scoring system), performed by Allergy Testing Laboratory in Margate, Florida, showed high sensitivity to latex (score of 4.1, where 0 is no sensitivity and 6 is maximum sensitivity). Because we suspected that the small amount of latex in the intravenous tubing and bottles could have been responsible for the allergic reactions, material was gathered that was as latex-free as possible. We used Abbott 0.9% sodium chloride (Abbott Laboratories, North Chicago, Ill.) in a glass bottle with a synthetic stopper. This was connected to Abbott intravenous tubing with a three-way stopcock and no side ports. A plastic intracatheter was inserted into a forearm vein and connected to the tubing with a Baxter Pharmaseal extension tube (Baxter Healthcare Corp., Pharmaseal Div., Valencia, Calif.). Normal saline solution was infused, and no adverse reaction occurred. Additional injections of 1 ml 1% lidocaine, with and without preservative, caused no reaction.

DISCUSSION

In 1979 Nutter⁴ described a case of urticaria caused by exposure to latex and in 1984 Turjanmaa et al.⁵ presented two cases of anaphylaxis during surgery, which were presumed to be caused by latex surgical gloves. Since then, there have been a number of reports of intraoperative anaphylaxis in patients who were shown to be allergic to latex either by skin test or by RAST.⁶ Kwittken et al.⁷ recently described four children with severe allergic reactions that were presumed to be caused by latex contamination of their intravenous infusions. In two of the cases injection of the medication through a latex port in the intravenous set was believed to have initiated the reaction,

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and in the other two cases the cause was believed to be the inadvertent substitution of a latex-containing solution administration set for a non-latex one.

Allergy to the minute amounts of latex in intravenous tubing and bottles represents special diagnostic and therapeutic problems. As in this case, other medications are usually believed to be the more likely cause of a reaction, but to test this hypothesis one usually feels more comfortable with an intravenous line in place. If one does suspect an allergy to latex in the intravenous tubing and bottle, the next challenge is to obtain material that is latex-free. However, the manufacturers do not list the contents of the materials used. We assumed that things that felt "rubbery" should be avoided. We called the manufacturers of the tubing and bottles that we used to ascertain the latex content, and they did not think that there was any latex in the items that we chose. However, they did not actually manufacture many of their supplies, so unless one goes to the very source of each component, it is still possible that some apparently latex-free setups could have trace contamination.

The systemic reactions that we witnessed lasted for several hours. This is unusual for the typical anaphylactic reaction. In retrospect, it may have continued because we left the intravenous line in place and thus were continuing to infuse allergen.

CONCLUSIONS

Caution must be used in rendering all forms of treatment to patients with a history of latex allergy. Even such generally uneventful procedures

as starting an intravenous line could be risky. It has even been postulated, but not proven, that using medications from a multidose vial with a rubber stopper could deliver latex allergen to a susceptible patient.

There have been suggestions for the use of prophylactic medications in high-risk patients. The medications advocated include corticosteroids, H₁ and H₂ antihistamines, and adrenergic agents. Whether systemic reactions can be prevented by these protocols remains to be proven. In the cases described by Kwittken et al.⁶ such premedication did not prevent systemic allergic reactions. Heightened awareness of the allergy risk of latex products in high-risk populations, which include health care workers, is essential in averting anaphylactic reactions and in promptly treating unavoidable reactions.

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