14. Parkinson S, Mueller J, Little W, Bailey S: Extent of blockade with various approaches to the lumbar plexus. Anesth Analg 68:243–248, 1989

15. Bromage P: Connections between extradural and paraspinal tissue spaces: 2. Anatomy, Epidural Analgesia. Edited by Bromage P. Philadelphia, WB Saunders, 1978, pp 31–32

16. Dalens B, Haberer JP: Epidural anesthesia in children. ANESTHESIOLOGY 66:714–715, 1987

Anesthesiology
83:220–221, 1995

Pulmonary Artery Catheter Balloon: An Unusual Cause of Severe Anaphylactic Reaction

Marilyn Gosgnach, M.D., Lise Marie Bourel, M.D.,* Anne Ducart, M.D.,† Eric Barre, M.D.,* Pierre Viars, M.D.‡*

SINCE 1989, latex (gloves, syringes) has become an important agent responsible for intraoperative allergic reactions. This case report focuses on the balloon of a pulmonary artery catheter as the source of latex involved in a severe anaphylactic reaction.

Case Report

A 63-yr-old obese patient (102 kg) was admitted for resection of an 11-mm abdominal aortic aneurysm. The patient had undergone no previous surgical procedures or general anesthesia. He had only reported an allergic reaction to shellfish. The preoperative electrocardiogram revealed inverted T-waves in the V3–V6 leads. A catheter was placed in the radial artery, and a pulmonary artery catheter was inserted *via* the internal jugular vein after disinfection of the skin and topical lidocaine anesthesia. Immediately after positioning the pulmonary artery catheter, a skin rash developed, and systolic arterial blood pressure decreased from 120 to 70 mmHg. Plasma volume expansion using gelatins and intravenous administration of dexchlorpheniramine (5 mg), methylprednisolone (120 mg), and epinephrine (total dose 1 mg by 0.1 mg intravenous bolus) succeeded in restoring the hemodynamic status. The suspected diagnosis was an allergic reaction, and the different elements in contact with the patient before the occurrence of the first signs were noted: iodine, lidocaine, and heparin in the arterial catheter and the pulmonary artery catheter. Surgery was cancelled, and the pulmonary artery catheter was removed. In view of the delay, coronary angiography and aortography were performed to complete the preoperative assessment. We suspected iodine as the responsible agent, but angiography was performed with no adverse reaction. The following day, the patient was rescheduled for resection of the abdominal aortic aneurysm. After insertion of a peripheral intravenous catheter, 2 mg midazolam and 50 μg fentanyl were injected. Then a radial artery catheter and a pulmonary artery catheter were inserted. Just after positioning the pulmonary artery catheter, the patient complained of dyspnea, and the hemoglobin oxygen saturation decreased from 93% to 79%. Pulmonary auscultation revealed bronchospasm. At the same time, the systolic arterial pressure had decreased from 110 to 50 mmHg, and a skin rash was noted. Tracheal intubation was performed, and phenylephrine, then epinephrine (a total dose of 3.5 mg), as well as volume expansion using crystalloids were used to restore the hemodynamic status. Blood and urinary samples were obtained, and the surgical procedure was cancelled again. The trachea was successfully extubated 2 h later, and the pulmonary artery catheter was removed at that time.

Tests performed to determine the possible responsible agents included human basophil degranulation test in presence of midazolam, lidocaine, iodine, fentanyl, and latex. Radioallergosorbent tests were performed to detect immunoglobulin E compared with the same agents. Radioimmunoassay was used to detect immunoglobulin E against the quaternary ammonium ions of muscle relaxants. The results of these examinations were received 10 days later, and the conclusion was an allergy to latex. In this context, the only source of latex, compatible with the chronology of the clinical events, was the balloon of the pulmonary artery catheter.

Carefully avoiding further latex exposure, the surgical procedure was performed uneventfully.

* Staff Anesthesiologist.

† Resident in Anesthesiology.

‡ Professor of Anesthesiology; Chairman.

Received from the Department of Anesthesiology and Critical Care, Groupe Hospitalier Pitié-Salpétriére, Paris 6 University, Paris, France. Submitted for publication January 5, 1995. Accepted for publication March 21, 1995.

Address correspondence to Dr. Gosgnach: Départment d'Anesthésie Réanimation, Hopital Pitié Salpétrière, 47-83 boulevard de l'Hopital, F-75651 Paris Cedex 13, France.

Key words: Allergy, anaphylaxis: latex. Pulmonary catheterization.

Discussion

Exposure to latex can lead to two types of allergic reaction: Cutaneous exposure induces local reactions, whereas mucosal or parenteral exposures can lead to life-threatening reactions.[1] Local reactions are frequent in health-care workers because of continual exposure to latex gloves.[2] Anaphylactic reactions frequently have been described in patients with spina bifida chronically exposed to latex because of intermittent urinary catheterization.[3–5] More often, these adverse events occur during surgery, between 40 and 290 min after induction of anesthesia.[6]

In the current case, the anaphylactic reaction occurred before the beginning of surgery and before induction of anesthesia. Anaphylactic shock occurred twice under the same conditions, after insertion of the pulmonary artery catheter, and the implicated source of latex was its inflatable balloon. After these events, the patient related that he had noticed a localized skin rash after wearing rubber gloves.

Anaphylactic reactions provoked by latex have significantly increased in France from 0.5% before 1989 to 13% after 1989, and represent the second most important cause of anaphylactic reaction in the perioperative period.[7]

References

1. Slater JE: Latex allergy—what do we know? J Allergy Clin Immunol 90:279–281, 1992

2. Turjanmaa K, Reunala T: Contact urticaria from rubber gloves. Dermatol Clin 6:47–51, 1988

3. Moneret-Vautrin DA, Laxenaire MC, Bavoux F: Allergic shock to latex and ethylene oxide during surgery for spina bifida. ANESTHESIOLOGY 73:556–558, 1990

4. D'Astous J, Drouin MA, Rhine E: Intraoperative anaphylaxis secondary to allergy to latex in children who have spina bifida. J Bone Joint Surg Am 74:1084–1086, 1992

5. Merguerian A, Klein RB, Graven MA, Rozycki A: Intraoperative anaphylactic reaction due to latex hypersensitivity. Urology 38:301–304, 1991

6. Gold M, Swartz JS, Braude BM, Dolovich J, Shandling B, Gilmour RF: Intraoperative anaphylaxis: An association with latex sensitivity. J Allergy Clin Immunol 87:662–666, 1991

7. Laxenaire MC, Moneret-Vautrin DA, Widmer S, Mouton C, Gueant JL: Substances anesthésiques responsables de chocs anaphylactiques. Enquête multicentrique française. Ann Fr Anesth Réanim 9:501–506, 1990