CASE REPORTS


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

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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 cm 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 gelatin and intravenous administration of dextran-70 (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 differential diagnosis included 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 anaphylaxis 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 92% 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. Trachal intubation was performed, and phentylephrine, then epinephrine (a total dose of 5 mg), as well as volume expansion using crystalloids was used to restore the hemodynamic status. Blood and urine 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 to determine the possible responsible agent 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.
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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. Local reactions are frequent in health-care workers because of continual exposure to latex gloves. Anaphylactic reactions frequently have been described in patients with spina bifida chronically exposed to latex because of intermittent urinary catheterization. More often, these adverse events occur during surgery, between 40 and 290 min after induction of anesthesia.

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 1.3% after 1989, and represent the second most important cause of anaphylactic reaction in the perioperative period.

References