CASE REPORTS

The incidence of anaphylactic reactions during anesthesia is estimated in France to be approximately 1/3,500.

Professor and Chairman.

Received from the Department of Anesthesia, Henri Mondor Hospital, Creteil, France. Submitted for publication July 10, 1998. Accepted for publication November 13, 1998. Supported by the University Paris Val de Marne, France.

Address reprint requests to Dr. Duvaldestin: Department of Anesthesia, Henri Mondor Hospital, 51 avenue du Marechal de Lattre de Tassigny, 94010 Creteil, France. Address electronic mail to: philippe.duvaldestin@hmn.ap-hop-paris.fr

Key words: Anaphylaxis; muscle relaxants; heredity.

Anesthesiology, V 90, No 4, Apr 1999

References


Anesthesiology Shock to Neuromuscular Blocking Agent: A Familial History

Philippe Duvaldestin, M.D.,* Claire Wigdorowicz, M.D.,† Inanna Gabriël, M.D.†

The anaphylactoid reactions during anesthesia in patients with chronic obstructive pulmonary disease (COPD) and saber-sheath trachea suffered pulmonary edema associated with emergence from general endotracheal anesthesia. Saber-sheath trachea in this patient, as is typical, resulted in significant reduction in tracheal caliber caused by reduction in strength of the tracheal cartilage. Pulmonary edema in this patient was most likely low pressure, compatible with the diagnosis of NPE. Awareness of the association of saber-sheath trachea with COPD in similar patients is probably warranted.

General anesthetics are the most common cause of anaphylactic reactions during anesthesia. We report two cases of anaphylactic shock in relation to the administration of nondepolarizing neuromuscular blocking agents that occurred in the members of a family, which suggests that they may be a familial predisposing factor to anaphylactic reactions induced by muscle relaxants.

Case Report

A 62-year-old woman weighing 50 kg without preexisting disease was undergoing thyroidectomy during general anesthesia for euthyroid goiter. Anesthesia was induced with 150 µg fentanyl and 350 mg...
thiopental associated with 40 mg rocuronium to facilitate trachal intubation. Immediately after induction of anesthesia, a generalized cutaneous rash developed that was associated with severe hypotension (systolic arterial pressure was 35 mmHg at 2 min after induction) and tachycardia at 115 beats/min. No bronchospasm was present. Immediate treatment consisted of 1 mg intravenous adrenaline and the infusion of 500 ml hydroxyethylstarch. Blood sampling for serum tryptase levels was immediately performed. Return to normal hemodynamic status was obtained after 18 min, and surgery proceeded uneventfully, with anesthesia being maintained with nitrous oxide and isoflurane. Diagnosis of anaphylactic shock was confirmed from the increased serum tryptase level, which was 30 uL, with control value being less than 2 uL. Results of intradermal skin tests performed 6 months later were strongly positive for rocuronium at the dilution of 1/1000. The skin test results were also positive at the dilution of 1/100 for pancuronium, atracurium, and mivacurium, but were negative for vecuronium, succinylcholine, thiopentol, fentanyl, and latex.

During the postoperative visit on the day after surgery, the patient informed us that her brother experienced a similar incident 8 yr previously during anesthesia. The review of anesthetic and medical record of the brother revealed that he was 52 yr old and weighed 78 kg when he underwent general anesthesia for surgery of the lower limbs. He was known to have allergic asthma. Induction of anesthesia consisted of 10 mg diazepam and 100 µg fentanyl, followed by 400 mg thiopental and 15 mg alcuronium. A generalized cutaneous rash, followed by cardiovascular collapse and bronchospasm were observed immediately after induction of anesthesia. Successful resuscitation was achieved after the administration of 1 mg intravenous adrenaline. Surgery was cancelled, and the patient was operated on a few months later during epidural anesthesia. In 1997, the two patients were referred to our allergy clinic for skin tests. Results of intradermal skin tests performed on the brother were positive for suxamethonium (1/100 dilution) and atracurium, mivacurium, vecuronium (1/10 dilution) and were negative for pancuronium, fentanyl, and latex. Alcuronium was not tested.

Discussion

This is the first clinical report of a family history of anesthetic anaphylactic shock. In both cases, anaphylactic shock can be attributed to allergy to muscle relaxants. In the sister, who received rocuronium, cutaneous test results were positive for rocuronium. In her brother, alcuronium, which was the muscle relaxant administered, could not be tested, but positive test results for other muscle relaxants were observed. Cross-sensitivity is frequent in patients who have reacted to muscle relaxants.4,5 We cannot rule out the possibility that there is a common genetic basis for these two reactions. However, we also realize that because of the 2.5 million patients undergoing anesthesia with muscle relaxants in France yearly, according to a recent national survey (not yet published), it is entirely possible that these coincident reactions occurred solely because of chance. Alternatively, because there may be cross-sensitization be-

References