

Bronchospasm In A Pediatric Adenoidectomy Case

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Abstract

Bronchospasm is a rapid and acute bronchoconstrictor response of airways and can be a life threatening complication. We report about a pediatric adenoidectomy patient who developed intraoperative bronchospasm after a neuromuscular blocking agent was used during induction.

INTRODUCTION

Bronchospasm is a rapid and acute bronchoconstrictor response of airways and can be a life threatening complication. Mivacurium is a neuromuscular blocking agent with a short acting time of about 30 minutes, due to a fast hydrolysis by pseudocholinesterases (1). Main disadvantage of mivacurium is histamin release. We must be aware of the rare but a serious complication, bronchospasm, in pediatric adenoidectomy cases (2). Adenoid hypertrophy is related with atopic frame.

CASE REPORT

Adenoidectomy has been planned because of adenoid hypertrophy in a 4 year old male child, 25 kilograms, with no history of asthma, allergy and pulmonary disease. After premedication with rectal midazolam 2mg he was admitted to operation room. His blood pressure (BP) was 112/62mmHg, heart rate 93 beats/min. and pulse oximetry 96% while breathing air. Thiopental sodium 125mg, fentanyl 25µg and mivacurium 4mg was used in induction. Tracheal intubation was performed. Immediately after intubation hyperemia, erythema was seen in neck and chest region. Rigidity in thorax and a increase in inspiratory peak pressure occurs with widespread wheezing in auscultation. Methylprednisolone 30mg, epinephrine 0.25mg were injected intravenously (i.v.) and beta-2- agonist (Ventolin) (aerosol) were administered and ventilated manually by 100 FiO₂ %. While ventilation, peripheral O₂ SAT: 88-91 % and end-tidal carbon dioxide tension PETCO₂: 55-60 mmHg was respectively. Oxygen saturation were significantly increased at 10-15 minutes after administration of the ventolin and injections. The inspiratory peak pressure decreased to 20 mmHg from 45 mmHg, the skin eruptions

disappeared and the wheezing regressed completely after extubation. Tracheal extubation 30 min later was uneventful, as was the patient's subsequent recovery in the intensive care unit.

DISCUSSION

Bronchospasm is a rapid and acute bronchoconstrictor response of airways and can be a life threatening complication. Bronchospasm in association with anaesthesia may appear as an entity in its own right or be a component of another problem such as anaphylaxis. Bronchospasm may present in a variety of ways and may be associated with other life threatening conditions. Although most cases are handled appropriately by the attending anaesthetist, the use of a structured approach to its diagnosis and management would lead to earlier recognition and/or better management in 10% of cases(4,5). Guidelines to treatment recommend oxygen, methylprednisolone, epinephrine i.v. Inhaled beta-adrenergic agonists remain the initial treatment of choice for acute bronchospasm(6).

Intraoperative bronchospasm frequently develops in 0-9 age period during intubation. It may present with expiratory wheeze, prolonged exhalation or, in severe cases, complete silence on auscultation. As the effect time is harmonious with surgery time it is widely used in adenoidectomy cases. Adenoid hypertrophy is related with atopic frame(7,8).

Mivacurium is a new neuromuscular blocking agent with a short acting time of about 30 min, due to a fast hydrolysis by pseudocholinesterases. Main disadvantage of mivacurium is histamin release so that we must be aware of the rare but a serious complication, bronchospasm, in pediatric adenoidectomy cases(9,10). There have been reports of

allergic reactions to the recently introduced neuromuscular relaxants. These reactions tended to be severe and manifested by cardiovascular collapse, rash and bronchospasm. According to Fine GF. and et al.'s study design which mivacurium also causes very mild subclinical bronchoconstriction₍₁₁₎.

In our case, although there was no cardiovascular collapse, diagnosis was easy because of hyperemia, erythema in neck and chest region, increase in inspiratory peak pressure, rigidity in thorax and decreasing oxygen saturation and increasing end-tidal carbon dioxide tension PETCO₂.

In conclusion, we suggest that mivacurium may cause bronchospasm in pediatric patients with adenoid hypertrophy because adenoid hypertrophy is related with atopic predisposition.

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