



Case Report

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Anaphylaxis developing with sugammadexs in pediatric case

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ABSTRACT

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Bronchospasm developed in a 21-month-old that underwent bronchoscopy due to foreign body aspiration immediately after sugammadex which was applied for short-term decurarization. We thought this was due to anaphylaxis. Peripheral oxygen saturation and pulse decreased, breathing pattern disturbed, and a rash appeared on upper part of the body and the face in the patient. Deep sedation was achieved and the patient was treated with methylprednisolone, pheniramine, theophylline, and inhaler bronchodilator application.

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1. Introduction

Sugammadex is a selective agent which reverses the effects of aminosteroid group of muscle relaxants like rocuronium and vecuronium by encapsulation method (Schaller et al., 2013). It acts at a rate of under two minutes. Renal clearance and dosage are independent of age and fat distribution but dependent on bodyweight

and deepness of neuromuscular block (Sanfilippo et al., 2013). Although it is used in many countries, the evidence for the safety of the drug, the risks it poses and the hypersensitivity reactions are not enough.

Despite a large number of cases showing that sugammadex has the capacity to induce allergic reactions, it is not yet clear whether it is more allergenic

than the commonly used anesthetic agents (Baldo et al., 2014). We present a 21-month-old case that developed anaphylaxis after recurarization with sugammadex sugammadex which was performed after bronchoscopy due to foreign body aspiration.

2. Case

Emergency bronchoscopy was performed to a 21-month-old and 11 kg child with no previous history of a chronic disease with an indication of foreign body aspiration due to the information that he might have aspirated a peanut. There was a congenital lesion on the forehead, starting from between the eyebrows and extending through the frontal region to the scalp (Fig. 1). For anesthesia induction IV midazolam 0.1 mg/kg, fentanyl 1 μ g/kg, propofol 2.5 mg/kg, rocuronium 0.6 mg/kg and prednisolone 2 mg/kg were used. After the operation which lasted approximately 10 minutes, 2 mg/kg sugammadex was administered. His spontaneous respiration returned, and s/he was extubated. At this time, diffuse redness and a rash in the form of blistering occurred at his/her neck, bilateral supraclavicular regions and on the face (Fig. 1). Simultaneously, peripheral oxygen saturation and pulse rate decreased and breathing pattern deteriorated. Inability to hear the respiratory sounds suggested that angioedema might have developed. This condition was interpreted as a bronchospasm which developed due to anaphylaxis after sugammadex. Sedation was deepened with 15 mg propofol and assisted mask ventilation was performed. Additional prednisolone of 10 mg was given. After IV 10 mg pheniramine and salbutamol inhaler was administered, 5 mg/kg aminophylline infusion was initiated. Thus, ventilation of the patient who has difficulty in ventilation was achieved. After a period of assisted-mask ventilation spontaneous respiration was returned without a need for reintubation. He was followed in the recovery room about 90 minutes and sent awake to the ward. After the controls in a pediatricsclinic, he was discharged on the first postoperative day.



Fig. 1. Congenital skin lesion. Skin findings in the face and neck region.

3. Discussion

Early recognition of anaphylaxis signs and symptoms is important for prognosis. Monitoring of the patients during anesthesia application and presence of a patent IV line provides advantages to anesthesiologists to deal with such reactions. Although there are direct monitors patient's face, neck, and upper extremities are followed indirectly for heat, pulse, rash and color changes. Despite all the advanced monitorization methods indirect follow upis indispensable for anesthesiologists during follow up and crisis management.

It is generally advised to administer adrenaline first to the patient in an emergency situation such as anaphylaxis (Harper et al., 2009). But the initial dose and the methodology to be applied is controversial. Because the treatment should be shaped according to the anatomy of the patient, the clinical features and the response received in the emergency intervention (Mertes et al., 2011). We didn't approach aggressively due to the advantage of monitoring the patient. Because respiratory sounds were lost and pulmonary ventilation decreased during intervention with medications we thought a bronchospasm due to histamine discharge and achieved respiratory control by deepening sedation. Vital signs rapidly improved because hypoxia was prevented at an early period. Because the patient was being closely followed and gave a response to early intervention adrenalin was not given after the response. Priorities in the treatment should be stopping the possible cause, informing the surgeon, calling for help, maintaining the airway and continuing oxygen treatment. Although corticosteroids and antihistamines are used for continuation of treatment there is not sufficient and strong evidence (Choo et al., 2010). Inhaled β_2 adrenergic receptor agonists or nebulized adrenaline should be administered in cases of bronchospasm without arterial hypotension (Dewachter et al., 2009). There are controversial issues about treatments that can be used and we used corticosteroid, antihistaminic and inhaler agent.

In the prospectus of the drug including sugammadexas an active agent (Bridion®, Merck Sharp Dohme Corporation, Istanbul), use in children below 2 years of age is not recommended; however, our patient was nearly 2 years old. Because of the severe damage to the lungs due to foreign body aspiration and surgical manipulation recovery was expected to be delayed. In addition, the decision to use sugammadex was made because neuromuscular antagonism with anticholinesterase and anticholinergic combination could cause fluctuations in hemodynamic values of the patient. The operation finished in a short time. However, we thought that anaphylaxis in this patient developed due to sugammadex because we didn't use any medications before or simultaneously with sugammadex during the extubation phase.

The most effective way to deal with anaphylaxis which is commonly seen in both children and adults is to follow them closely even if they are monitored and

to make quick decisions. We are of the opinion that it is necessary to be alert and prepared for anaphylaxis with use of sugammadex in children.

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