

# Reversal of Rocuronium Induced Bronchospasm Via Injection of Sugammadex: Letter to the Editor

## Rokuronyuma Bağlı Bronkospazmın Sugammadex Uygulanımıyla Çözülmesi

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In this case, we report a patient of severe bronchospasm occurring immediately after injection of rocuronium bromide intravenously as a sole sign of anaphylactic reaction to the muscle relaxant.

A 9-yr-old girl was undergoing an abdominal magnetic resonance imaging (MRI). Her medical history and physical examination were unremarkable.

On arrival in the MRI room, the baseline monitorizations were done. Anesthesia was induced with midazolam 2 mg and propofol 100 mg. As soon as the loss of consciousness was achieved, rocuronium 30 mg was given. Within the thirty seconds when attempts made to mask ventilate, it was difficult and there were not any chest movements, meanwhile the oxygen saturation started to decrease and the mask ventilation was impossible so the trachea was immediately intubated. Overall, there were no haemodynamic changes on the monitor except decreasing oxygen saturation. With vigorous efforts by hand-bag ventilation, her oxygen saturation was only kept between 85-92% by 100% oxygen delivery.

Assuming this as a bronchospastic reaction, bronchodilators and anti-histaminics were given intravenously.

Interestingly, there were no rashes, skin eruptions, haemodynamic changes but only hypoxia with high airway pressures. At this point we considered that the causative agent for the situation could be rocuronium bromide. It has already been 13 mins after the injection of rocuronium, we decided to give sugammadex and injected 120 mg. IV empirically.

Just 2 mins after sugammadex injection, she started breathing spontaneously, opened her eyes and showed a vigorous reaction to ETT. After hearing the normal breathing sounds on auscultation, she was extubated uneventfully.

The patient made an uncomplicated recovery, but unfortunately we were unable to check her mast cell tryptase levels as the whole event took place

outside the operating theatre and it was very difficult to organize and follow the ideal next steps.

During eight weeks' period, the patient was invited to the hospital twice, to perform skin tests, but the parents refused to do.

In this case report, the administration of sugammadex as low as 3,6 mg/kg during an episode of isolated bronchospasm, suspected rocuronium induced anaphylactic reaction, complete recovery was achieved.

We achieved this complete recovery by sugammadex injection 13 min after the onset of the event. In previous case reports, a sugammadex injection was followed by a rapid hemodynamic improvement, usually within two minutes.<sup>1-4</sup> Jones

and Turkstra, proposed that large doses up to 16 mg/kg sugammadex might be required as the theoretical aim was to encapsulate all the circulating rocuronium molecules.<sup>4</sup> On the other hand we achieved a complete recovery using a dose of 3.6 mg/kg. Supporting Conte et al., in our case, time elapsed between the first and only symptom of bronchospasm and injection of sugammadex was 13 minutes and the dose administered was 3.6 mg/kg.<sup>1</sup>

We made our decision of administering sugammadex empirically.

Isolated bronchospasm at induction of anesthesia should keep sugammadex in minds of anesthesiologists if and only if there is not any other explanation for the situation.

## REFERENCES

1. Conte B, Zoric L, Bonada G, Debaene B, Ripart J. Reversal of a rocuronium-induced grade IV anaphylaxis via early injection of a large dose of sugammadex. *Can J Anaesth* 2014;61(6):558-62.
2. Raft J, Leclercq M, Longrois D, Meistelman C. [Fast recovery of haemodynamic and ventilatory functions after sugammadex bolus following rocuronium- induced anaphylactic shock refractory to conventional treatment]. *Ann Fr Anesth Reanim* 2012;31(2):158-61.
3. Naguib M. Sugammadex: another milestone in clinical neuromuscular pharmacology. *Anesth Analg* 2007;104(3):575-81.
4. Jones PM, Turkstra TP. Mitigation of rocuronium-induced anaphylaxis by sugammadex: the great unknown. *Anaesthesia* 2010;65(1): 89-90.