Anaphylactic reaction to rocuronium with sugammadex reversion

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BACKGROUND

- ✓ Allergic reactions in anaesthesia are rare but potentially fatal.
- ✓ Among all anaesthetic drugs, neuromuscular relaxants are the most frequently involved in allergic reactions (55-69%) and rocuronium is one of the most frequent agents.

CASE REPORT

Male patient | 12 year-old | 60 kg | ASA I

No history of allergies

Proposed for Laparoscopic Appendicectomy

Anesthetic Records

Induction: Midazolam 2mg + Propofol 150mg + Fentanyl 0.05mg + Rocuronium 40mg.

✓ After rocuronium administration:

- Generalized maculopapular rash
- Severe bronchospasm
 - Bilateral wheezing
 - SpO₂ < 80% (pulse oximeter)
- Bradycardia

Orotracheal Intubation

➡ **Hydrocortisone 200mg / methylprednisolone 125mg / aminophylline 240mg / salbutamol inhaler 200µg**

Ventilation mode: pressure-controlled

Despite medication, the patient kept signs of instability, with ventilation pressures greater than 30cmH₂O for tidal volumes above 300mL.

- ✓ Due to procedure's urgency, surgery was not deferred but it was converted to laparotomy.

Maintenance: sevoflurane / Air / O₂

Time of procedure: 45 minutes

Emergency: sugammadex 200mg

Sudden decrease in ventilatory pressures, wheezing resolution and uneventful extubation.

Immunoallergology Observation

Skin allergy test:

- **Positive:** rocuronium
- **Negative:** latex; fentanyl, midazolam, propofol

DISCUSSION

Allergy / Anaphylaxy

- ✓ **According to European Academy of Allergology and Clinical Immunology :** a systemic or widespread hypersensitivity reaction, severe and potentially fatal.

➢ Possible affected systems:

- Cardiovascular
- Respiratory
- Mucocutaneous
- Gastrointestinal

✓ Treatment:

Sugammadex

- ✓ Selective antagonist of rocuronium and vecuronium;
- ✓ Mechanism of action based on the encapsulation of the muscle relaxant molecule, "removing it" from circulation.

ELIMINATION OF CAUSATIVE AGENT

Still unanswered

- ✓ Ideal dose of sugammadex
- ✓ Rocuronium molecule is not completely encapsulated (maintenance of interactions between rocuronium molecule and IgE)
- ✓ Cross-reactions with other molecules used for the treatment of anaphylactic reactions (e.g.: hydrocortisone or methylprednisolone)

LEARNING POINTS

- ✓ In Anaesthesia, patient's safety is the priority and allergic reactions are among the most serious risks.
- ✓ Due to its mechanism of action, sugammadex may represent a solution to life-threatening allergic reactions to rocuronium, one of the most frequent anaesthetic agents involved in anaphylactic reactions.
- ✓ Given the scarcity of reported cases of anaphylaxis to rocuronium, with therapeutic use of sugammadex, and the absence of controlled studies, there are still many doubts to be clarified. Therefore sugammadex shouldn't be a first-line therapy in cases of hypersensitivity to rocuronium.

REFERENCES

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