

Can Defasciculating Dose be Beneficial? A Rare Ocular Trauma Presentation

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Abstract

Intraocular foreign body injuries are a common form of eye trauma in paediatric patients. The fear of losing vision amounts to the anxiety of parents and early retrieval is warranted. In such cases, induction of anaesthesia in view of uncertain Nil Per Oral (NPO) status and an un-cooperative child makes the situation more challenging for the anaesthetist. We are presenting an interesting case of the intraocular foreign body where defasciculating dose was administered so as to prevent unnecessary movement of the foreign body due to fasciculations.

Keywords: Airway; Fasciculations; Ocular Trauma

Introduction

Ocular trauma due to foreign bodies is one of the common forms accounting for 18 - 41% of all open-globe injuries [1]. The complications including bleeding, endophthalmitis, traumatic lens rupture, vitreous haemorrhage etc. make foreign body retrieval an emergency surgery so as to prevent impending vision loss. In children materials such as sticks and pencils are some of the common foreign bodies inflicting eye injuries. In a case series of post-traumatic endophthalmitis in children from India, the most common organic source of trauma was broomstick followed by pencil-tip injury, while the hypodermic needle was the most common source in the inorganic group [2]. However, in India, during the summer season, the traditional use of hand-operated fan "Haath Pankha" in rural setups is very common. We are highlighting a very rare case of penetrating eye injury with the hooked end of metallic hand-operated fan stuck inside the left eye.

Case Presentation

A two-year-old male child presented to the eye emergency for foreign body removal. Providing anaesthesia to small children with the large ocular foreign body can be challenging because of their doubtful Nil Per Oral (NPO) status and close vicinity of the foreign body to the airway. The anaesthetists have to deal with the anxiety of parents as well as the uncooperative behaviour of the children. The pre-anaesthetic evaluation revealed that the child was not NPO and appeared uncooperative. The mother of the child was asked to wear an operating room (OR) aprons and was allowed to enter the OR simultaneously keeping the child busy with a cartoon movie on iPad. After attaching the standard American Society of Anaesthesiologists (ASA) monitors and securing 22 G intravenous cannula with the help of EMLA cream, pre-oxygenation was carried out via nasal cannula at a flow rate of 6 litres/minute along with gently placing the face mask

over the child's face till attaining end-tidal oxygen (EtO₂) levels above 90. The critical location of the foreign body, the weight of the fan on the child's chest and its metallic nature made even slight movement by the child detrimental to the foreign body lying inside the ocular tissue (Figure 1a). Placing the face mask firmly on the child's face while ensuring adequate seal for the purpose of oxygenation and ventilation might have led to an inappropriate movement of the foreign body. The modified rapid sequence induction was planned using defasciculating dose of atracurium 0.025 mg/kg followed by thiopentone 5 mg/kg and an intubating dose of succinylcholine 1.5 mg/kg three minutes later [3]. The intubation was carried out successfully with minimal head extension with the help of video-laryngoscope to avoid movement of the intraocular portion of the foreign body (Figure 1b). The defasciculating dose was administered so as to prevent any further injury to eye because of succinylcholine induced fasciculations.



Figure 1: 1a: Child with a foreign body in the left eye. 1b: Child post-intubation ready for foreign body retrieval.

Discussion

Rapid sequence induction is a common practice during anaesthesia practice especially in emergency scenarios where rapid intubation is desirable so as to avoid aspiration and hypoxia. Two drugs that are routinely used are Succinyl choline and Rocuronium but certain side effects of these two drugs needs to be considered prior to their use. Pre-treatment with non-depolarizing muscle relaxants like atracurium effectively prevent fasciculation caused by succinylcholine, presumably by blocking presynaptic nicotinic receptors [4]. The defasciculating dose although not advocated these days still can prove beneficial in such extraordinary circumstances. The option of rocuronium could not be explored because of its non-availability. The patient was handed over to the surgical team and the foreign body was retrieved successfully. Modifying our routine induction protocol, we were able to carry out the smooth anaesthesia induction aiding in uneventful foreign body removal.

Conclusion

Priming with non-depolarizing muscle relaxants effectively prevent fasciculation, although not advocated these days still can prove beneficial in such extraordinary circumstances.

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