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PROPOFOL INDUCED PERIOPERATIVE ANAPHYLAXIS: A CASE REPORT

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Abstract

Background: Although propofol is one of the most commonly used drugs for induction of anaesthesia, it is not devoid of anaphylactic potential. Early detection of any suspected anaphylactic reaction during anaesthesia, identification of the offending agent, prompt management and prevention of exposure to the offending agent in the future is the responsibility of the anaesthesiologist. This is a case report of anaphylaxis to propofol at induction of anaesthesia in a previously non-allergic 9year old boy who had right herniotomy done and responded to epinephrine injection.

Case Report: A 9yr old male child who had right herniotomy on account of right communicating hydrocele. Preoperative history was not remarkable. Intraoperative period was complicated by an anaphylactic reaction following administration of propofol at induction and was subsequently managed by securing the airway and adrenaline administration. Post-operatively he had bronchospasm/laryngospasm which was also managed successfully. He was transferred to PACU and monitored closely for several hours before he was discharged to the ward.

Conclusion: Early recognition and administration of adequate adrenaline is the mainstay of anaphylaxis management. Anaphylaxis is a clinical diagnosis, and tests such as total plasma tryptase are only supportive of the diagnosis. The anaesthesiologist plays a key role in coordinating care for the patient during and after a perioperative anaphylaxis event.

Keywords: Anaphylaxis, epinephrine, propofol, day case

BACKGROUND

Although propofol is one of the most commonly used drugs for induction of anaesthesia, it is not devoid of anaphylactic potential. The estimated incidence of perioperative anaphylaxis is 1 in 10,000–20,000[1,2,3] anaesthetic procedures.

Early detection of any suspected anaphylactic reaction during anaesthesia, identification of the offending agent, prompt management and prevention of exposure to the offending agent in the future is the responsibility of the anaesthesiologist.

We report the successful management of a 9year old boy with no known allergy who had right herniotomy done as a day case and had perioperative anaphylaxis to propofol at induction of anaesthesia and responded to epinephrine administration.

CASE REPORT

A 9yr old, 26kg male child, who had right herniotomy as a day case done on account of right communicating hydrocele.

Preoperative history was essentially not remarkable, there was no history of allergy to egg or adverse reaction in patient or relatives, there was no previous history of exposure to anaesthesia. Examination revealed young boy conscious and alert, afebrile, not pale, anicteric, acyanosed, not dehydrated, nil pedal edema, HR-90 bpm, regular, full volume, no radio-radial delay, other peripheral pulses present, BP 98/50mmHg, RR -20 cpm, genitourinary system revealed normal male external genitalia with right scrotal swelling measuring about 4x4cm, fluctuant but non-tender. PCV was 34%. He was classified as ASA I. Informed consent confirmed and patient taken into the operating room and assisted on the operating table. Monitors attached and baseline vitals were recorded.

He was pre-oxygenated for 5 minute and induced

with propofol at 2 mg/kg, after about 50s, patient noticed to have some bouts of cough, halothane was introduced to augment induction. Patient received a second dose of propofol (1mg/kg) after which a hypereamic skin discoloration along the path of injection spreading to the neck, chest, back, and other upper limb was noticed accompanied by tachycardia: 110 – 140 bpm, ranging saturation: 84 – 92% and hypotension: 60/40 to 75/ 53 mmHg. Airway was secured by endotracheal intubation followed by a dose of adrenaline 150 mcg intramuscularly. The hyperemia completely faded over a course of about 160 seconds and SpO_2 and other vital signs normalized. Decision to proceed was made by the team and anaesthesia was maintained with isoflurane in oxygen and patient was closely monitored.

Surgical procedure was uneventful, patient was extubated fully awake, while administering facemask oxygen, paradoxical chest wall movement with subcostal recession was noticed. The protocol for management of bronchospasm/laryngospasm was initiated. This was managed with inhalational halothane and intermittent positive pressure ventilation while monitoring vital signs until resolution of bronchospasm. After full recovery from anaesthesia, patient was placed in left lateral position and transferred to PACU room for further close monitoring before discharging to the ward. He was seen at the follow up clinic some days after and mother was counseled further and referred to allergy clinic for further evaluation.

DISCUSSION

Anaphylaxis may be allergic or nonallergic. An allergic reaction involves specific immunologic mechanisms, which may be IgE or non-IgE-mediated (IgG and immune complex complement-related). The main agents involved in perioperative anaphylaxis are often neuromuscular blocking agents, latex, hypnotics, antibiotics, opioids, and colloids. Neuromuscular blocking agents account for 69.2% while hypnotic agents account for 3.7% of the incidence[1]. Propofol (2,6 di-isopropyl phenol) is a commonly used induction agent with a low incidence of anaphylaxis[5]. The antigenic determinant may be the isopropyl groups, making for the suggested avoidance in patients with egg or soy allergy[7]. Anaphylaxis to lignocaine commonly added to propofol to reduce pain on injection has been reported.[1,2] This could further increase reaction attributed to propofol.

Risk factors for developing anaphylaxis under anaesthesia would include history of atopy, drug or food allergy, hereditary angioedema. Common perioperative triggers of anaphylaxis include neuromuscular blocking agents, antibiotics (most commonly beta-lactam antibiotics), and latex[1].

Diagnosis of anaphylaxis under anaesthesia could be challenging with varying clinical manifestations involving respiratory, cutaneous, and circulatory changes with a variable possible combination which include dyspnea, angioedema, stridor, wheeze, bronchospasm, flushing, pallor, urticaria, hyperemia, coagulopathy, hypotension, cardiovascular collapse. In this patient, we noticed bronchospasm, hyperemia and hypotension.

Less commonly, anaphylaxis may be provoked by chlorhexidine, colloids, blue dyes, heparin, protamine, and oxytocin. Chlorhexidine can be found in many products such as skin preparations and wipes, lubricant gels, and impregnated central venous lines and hence all the above should be avoided in patients with documented chlorhexidine allergy. It is rare for opioids or hypnotic agents (barbiturates, propofol, etomidate) to be the source of anaphylaxis. The neuromuscular blocking agents most commonly associated with anaphylaxis are rocuronium and suxamethonium.

Cross-reactivity with other non-depolarising neuromuscular blocking agents is also highest with

rocuronium and suxamethonium. In the study, patients with anaphylaxis to rocuronium had cross-reactivity rates of 44% with suxamethonium, 40% with vecuronium, 20% with atracurium, and 5% with cisatracurium. Cross-reactivity rates in patients with anaphylaxis to suxamethonium were 24% with rocuronium, 12% with vecuronium, and 6% with atracurium[2,4].

Anaphylaxis is a clinical diagnosis which requires a high index of suspicion and offending agent should be discontinued immediately with fluid administration. Adrenaline is the mainstay of treatment. Maintaining the airway, administration of oxygen 100%, intubating the trachea if necessary and ventilating the lung are important strategies.

CONCLUSION

Early recognition and administration of adequate adrenaline is the mainstay of anaphylaxis management. Anaphylaxis is a clinical diagnosis, and tests such as total plasma tryptase are only supportive of the diagnosis. The anaesthesiologist plays a key role in coordinating care for the patient during and after a perioperative anaphylaxis event.

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