Archives of Surgical Research | Case Report

Fatal Anaphylaxis Due to Atracurium without Cutaneous Manifestations: A Case Report

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IMPORTANCE Anaphylaxis or anaphylactic reaction is a medical emergency and it is a potentially life-threatening allergic reaction involving the various systems of the body, especially the cardiovascular and respiratory systems. It is usually triggered by an antigen with subsequent release of mediators from basophil and mast cells. Diagnosis is mainly clinical although laboratory investigations may help in further confirmation. Anaphylaxis during anesthesia is a rare event but could be life-threatening if not diagnosed and treated promptly. Among all the anesthetic agents, neuromuscular blockers are the most notorious to cause anaphylaxis. We are sharing a case of 44 years old female patient who underwent breast cancer surgery under general anesthesia and she developed anaphylaxis due to atracurium injection without cutaneous manifestations. She was managed actively with complete recovery and had her surgery done with the same general anesthesia.

KEYWORDS Anaphylaxis; atracurium; general anesthesia.

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Case Report

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Any drug administered during general anesthesia can cause an anaphylactic reaction and they are potentially life-threatening if not promptly managed. The incidence of anaphylaxis can vary from 1:10,000 to 1:20,000[1]. Among the anesthetic medications, a higher incidence (69.1%) is reported by neuromuscular blocking agents especially the atracurium while this incidence was up to 12.1% with latex[2]. The cardinal symptoms and signs of anaphylaxis are urticarial, urticaria, tachycardia, hypotension, and severe bronchospasm. Rarely, death may occur despite prompt recognition and management.

CASE PRESENTATION

A 44 years old female patient suffering from carcinoma right breast presented for modified radical mastectomy at Shaukat Khanum Memorial Cancer Hospital and Research Centre Lahore, Pakistan. She denied any other medical illness apart from high BMI (37kg/m2). Moreover, she was not allergic to any medication, had no previous general anesthesia and her clinical examination & laboratory investigation were essentially normal. After routine WHO safety checklist sign-in, monitoring was attached to get the baseline vitals followed by pre-oxygenation with 100% oxygen for 3 minutes. General anesthesia was induced with intravenous midazolam 2mg, fentanyl 100mcg followed by propofol 140mg. She had easy bag-mask ventilation, with good EtCO2 trace on the cardiac monitor and stable vitals. After getting adequate depth of anesthesia, I-Gel # 4 was inserted and an EtCO2 trace was confirmed on the monitor. However, there was considerable leakage around the I-gel that didn't get better with all the maneuvers. Therefore, it was decided to intubate the patient after multiple attempts to adjust the I-gel. Intravenous atracurium 50mg was given and after 3 minutes of bag-mask ventilation, she was intubated with ETT # 7.5 mm with the help of a C-MAC video laryngoscope. She developed hypotension and tachycardia and her oxygen saturation started dropping. There was no EtCO2 trace on the monitor and it was almost impossible to ventilate the patient with the bag. Considering that the ETT may be blocked with secretion, ETT was changed immediately but that did not improve the situation. On auscultation, there was a silent chest and SpO2 continue dropping. Immediately call for help was summoned and adrenaline 20 mcg was given considering that anaphylaxis. The first dose of adrenaline slightly improved the situation, Capnograph trace came on the monitor. After 2 minutes, 2nd dose of Adrenaline 20 mcg was given followed by 3rd dose after another 2 minutes. Blood pressure surged and Capnograph traces still showed marked airway obstruction although SpO2 improved to 95% with FiO2 100%. There was marked wheezing all over the chest, a salbutamol inhaler was given through the ETT, chlorpheniramine 10mg IV, and

hydrocortisone 100mg were given intravenously. An arterial line was placed in the left radial artery to get arterial blood gas analysis and for invasive monitoring. However, it took more than 20 minutes to stabilize the patient before we started the procedure. She underwent the surgical procedure and was extubated at the end of surgery with stable vitals. X-ray chest was done in the recovery room and it was normal with clear lung fields. After 4 hours of stay in PACU, she was sent to HDU for overnight oxygen support and monitoring. Surprisingly, there was absolutely no cutaneous manifestation of this allergic reaction and the patient had no previous history of an allergic reaction. The patient and her family were debriefed about the event and the flag was alerted in the hospital information system for future reference.

DISCUSSION

Perioperative anaphylaxis can happen due to any anesthetic medication. However, neuromuscular blocking drugs are one of the common causes of anaphylaxis during anaesthesia[3]. The pathogenesis of these serious and immediate hypersensitivity reactions may either be immunologic (immunoglobulin E mediated anaphylaxis) or related to direct stimulation of histamine release (anaphylactoid reactions)[4]. Although, both of these reactions are difficult to distinguish from each other as they present with similar symptoms and signs. Therefore, any suspected anaphylactic or anaphylactoid reaction should be thoroughly investigated to confirm the nature of the reaction. Cross sensitivity among neuromuscular blocking agents is common, so all the muscle relaxants must be tested. A certain group of patients may experience more severe hemodynamic collapse and be difficult to treat, for example, patients who are taking β-adrenergic blocking drugs may be difficult to treat with conventional management[5]. Clinical features of anaphylaxis may vary from a mild allergic skin reaction to severe cardiovascular compromise and it is triggered by histamine medicated peripheral vasodilation leading to pooling of blood in peripheral areas of the body and decreased venous return followed by low cardiac output. The lack of circulatory volume may even lead to epinephrine-unresponsive shock[6]. The aforementioned clinical picture could also be due to other serious clinical conditions including tension pneumothorax. In our case, we also thought that ETT might be blocked so ETT was replaced but that didn't improve the situation. Acute cardiogenic pulmonary edema is another differential diagnosis but that was ruled out as there was no cardiac history with this patient. In spite of having severe hemodynamic collapse, our patient did not show any cutaneous manifestations or angioedema. This case was adequately managed as per standard recommendations of Resuscitation Council UK guidelines[7].

CONCLUSION

Anaphylactic reaction can occur without skin manifestation. It needs prompt management and resuscitative measures to avoid catastrophic situation in perioperative settings.

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REFERENCES

1. Mertes PM, Laxenaire M-C. Allergic reactions occurring during anaesthesia. *Eur J Anaesthesiol.* 2002;19(4):240. doi:10.1017/S0265021502000418

2. Hepner DL, Castells MC. Anaphylaxis during the perioperative period. *Anesth Analg.* 2003;97(5):1381-1395. doi:10.1213/01.ANE.0000082993.84883.7D

3. Harper NJN, Dixon T, Dugué, et al. Suspected anaphylactic reactions associated with anaesthesia. *Anaesthesia.* 2009;64(2):199-211. doi:10.1111/J.1365-2044.2008.05733.X

4. Rose MA, Green SL, Crilly HM, Kolawole H. Perioperative anaphylaxis grading system: "making the grade." *Br J Anaesth.* 2016;117(5):551-553. doi:10.1093/BJA/AEW251

5. Mertes PM LM. Allergy and anaphylaxis in anaesthesia - PubMed. Minerva *Anestesiol.* 2004;70:285-291. Accessed March 15, 2022. https://pubmed.ncbi.nlm.nih.gov/15181405/

6. Fisher McD. M. Clinical observations on the pathophysiology and treatment of anaphylactic cardiovascular collapse. *Anaesth Intensive Care.* 1986;14(1):17-21. doi:10.1177/0310057X8601400105

7. Council RU. Emergency treatment of anaphylactic reactions Guidelines for healthcare providers Working Group of the Resuscitation Council (UK). *Published online* 2008. Accessed March 15, 2022. www.resus.org.uk