

Severe Anaphylaxis Following Intradermal Test Dose of Ceftriaxone

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Abstract

Ceftriaxone is a third-generation cephalosporin antibiotic used commonly for treating infections; however, hypersensitivity reactions, including anaphylaxis, occur in approximately 1%–3% of patients. Anaphylaxis can vary from minor skin rashes to life-threatening events affecting multiple organ systems, making it challenging for anesthesiologists. We present a case of severe anaphylaxis resulting in anaphylactic shock after an intradermal test dose of ceftriaxone in a 55-year-old female undergoing umbilical hernia mesh repair. The patient was a well-controlled hypertensive who came with stable vital signs before surgery. However, soon after administering the test dose, she began to exhibit asystole and unresponsiveness; hence, cardiopulmonary resuscitation immediately commenced, along with intravenous administration of adrenaline. Although consciousness returned, she failed to show palpable pulses while maintaining adequate respiratory effort. She was put on 100% oxygen with noninvasive ventilation and managed on noradrenaline and adrenaline infusions due to significant hypotension. After 6 days in critical care, the patient's condition improved, allowing for weaning from the ventilator and eventual discharge. This incident, despite a negative history of allergy testing, points to the unpredictable nature of drug hypersensitivity and the importance for anesthesiologists and surgical teams to be keen on monitoring patients. As there was normal recovery with adequate left ventricular function, we did not think in terms of any other cause. Clear documentation of such reactions is essential for future medical care, underlining the importance of complete allergy reviews to avoid similar life-threatening events. This case is also an important reminder about the vigilance that should be maintained during the perioperative period.

Keywords: Anaphylaxis, ceftriaxone, hypersensitivity, perioperative management

INTRODUCTION

A third-generation cephalosporin antibiotic that is frequently used to treat infections is ceftriaxone. Anaphylaxis is uncommon, although ceftriaxone-related hypersensitivity reactions occur 1%–3% of the time.^[1] Anaphylaxis symptoms can vary from a minor skin rash to a life-threatening event. Anaphylaxis is the most severe kind, and it affects various organs. The anesthesiologists may face significant difficulties with such patients. Despite negative intradermal skin testing for ceftriaxone, we report a case of severe anaphylaxis caused by an antibiotic that resulted in anaphylactic shock.

CASE REPORT

A 55-year-old female was brought to the surgical unit for umbilical hernia mesh repair. Her medical history

revealed well-controlled hypertension on telmisartan and amlodipine. The vital signs at admission were stable: pulse rate of 75 beats/min and blood pressure of 136/90 mmHg. Routine investigations also included renal function tests and echocardiography, with results within normal limits; thus, there were no immediate contraindications to surgery.

The patient was administered an intradermal test dose of ceftriaxone, an antibiotic commonly used for prophylaxis in surgical procedures, before the planned surgery. This was

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appropriate because of her medical history and lack of previous reactions to medications.

Index event

Shortly after the administration of the ceftriaxone test dose, the patient suddenly developed asystole, followed by unresponsiveness. The surgical team promptly initiated CPR and administered 1 mg of adrenaline intravenously. Fortunately, this intervention resulted in the return of consciousness, but the patient remained without palpable peripheral pulses. Despite the absence of pulses, she exhibited adequate respiratory efforts. The carotids were well felt. Hence, CPR was stopped with a single cycle.

Further management

Given her unstable hemodynamic status, it was decided to start the patient on non-invasive ventilation and start her on 100% oxygen to optimize her respiratory function. Continuous monitoring found severe hypotension, and this led to the initiation of vasopressor therapy. Noradrenaline was infused at a rate of 2 µg/min, in addition to an adrenaline infusion at a rate of 10 µg/min. This resulted in the gradual stabilization of her hemodynamics.

The multidisciplinary team continued to monitor and provide supportive care. In a few hours, the patient greatly improved her hemodynamic status, which eventually allowed the tapering of her vasoactive medications.

Postresuscitation care

The patient's recovery continued to progress positively. She was closely monitored in a critical care setting for 6 days, during which time her respiratory function improved, and her need for noninvasive ventilation diminished. Significant efforts were made to maintain her stability, and the medical team focused on the management of her hypertension, ensuring that her blood pressure remained within acceptable limits.

Gradually, she was weaned off the ventilator, allowing her to breathe independently. Before discharge, she was reassessed, with all vital signs stable and within normal ranges. Due to the nature of her reaction, allergy consultations were advised, but the patient declined any further allergy testing, stating personal reluctance toward invasive assessments.

DISCUSSION

The most probable diagnosis in this case was an anaphylactic reaction to the test dose of ceftriaxone. This reaction was evidenced by the abrupt onset of cardiovascular collapse following the ceftriaxone administration, manifesting as asystole, severe hypotension, and the requirement for resuscitation measures.

Anaphylaxis to beta-lactam antibiotics, such as ceftriaxone, is a known but rare occurrence. Given the patient's denial of prior allergy history and her response to the medication, it is crucial to document such incidents as it carries significant implications for future medical care.

The patient was discharged in stable condition after 6 days with clear instructions regarding future medical treatments and an alert for any allergies. A careful review of her medical history will be essential for future encounters, particularly with regard to antibiotics, to prevent the recurrence of similar potentially life-threatening reactions. This case underscores the importance of vigilance in monitoring for adverse reactions during the perioperative period.

Ali *et al.* have described such a rare case report but with an intravenous test dose. Bhagwat *et al.* have described the drug allergy intraoperatively with reactions confusing with spinal hypotension. There are few more reports of acute anaphylaxis after the first dose of the drug.^[2-4] Ours is the first clear case where there are no other interventions before the event, and an intra-dermal test dose was administered.

In conclusion, we present a case of severe anaphylaxis following an intradermal test dose of ceftriaxone, which highlights the rarity of such reactions despite negative allergy testing in the past. This incident shows how essential it is for anesthesiologists and surgical teams to have a heightened sense of alertness regarding potential hypersensitivity reactions, even in patients with unremarkable medical histories. Proper documentation and cautious management strategies are crucial to ensure patient safety during surgical procedures. Future encounters should include a rigorous review of allergies and a proactive approach to prevent potentially life-threatening reactions from antibiotics such as ceftriaxone. The main difference between anaphylaxis and anaphylactoid reactions is that anaphylaxis is an immune-mediated reaction, while anaphylactoid reactions are not.^[5] As the systemic response was so severe, we diagnosed it as a case of anaphylaxis. We could have measured serum Immunoglobulin E (IgE), but we did not. There are reports of noncorelation of IgE levels and severity of anaphylaxis.^[6] This case is a reminder of the unpredictability of drug sensitivities.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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