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CLINICAL INFORMATION

Perianesthetic refractory anaphylactic shock with cefuroxime in a patient with history of penicillin allergy on multiple antihypertensive medications

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KEYWORDS
Anaphylaxis;
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Abstract We report a case of perianesthetic refractory anaphylactic shock with cefuroxime in a patient with history of penicillin allergy on regular therapy with atenolol, losartan, prazosin and nicardipine. Severe anaphylactic shock was only transiently responsive to 10 mL of (1:10,000) epinephrine and needed norepinephrine and dopamine infusion. Supportive therapy with vasopressors and inotropes along with mechanical ventilation for the next 24 h resulted in complete recovery. She was successfully operated upon 2 weeks later with the same anesthetic drugs but intravenous ciprofloxacin as the alternative antibiotic for perioperative prophylaxis.

PALAVRAS-CHAVE
Anafilaxia;
Perianestésico;
Cefuroxima

Choque anafilático refratário perianestésico com cefuroxima em paciente com história de alergia à penicilina recebendo vários medicamentos anti-hipertensivos

Resumo Relatamos um caso de choque anafilático refratário no período perianestésico com cefuroxima em paciente com história de alergia à penicilina em terapia regular com atenolol, losartan, prazosina e nicardipine. O choque anafilático grave foi apenas transitoriamente responsivo a 10 mL de epinefrina (1:10000) e precisou de infusão de norepinefrina e dopamina. A terapia de apoio com vasopressores e inotrópicos, juntamente com ventilação mecânica por 24 horas resultaram em recuperação completa. A paciente foi operada com sucesso duas semanas mais tarde, com os mesmos agentes anestésicos, mas com ciprofloxacina intravenosa como antibiótico alternativo para a profilaxia perioperatória.

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Introduction

Operating room is a unique environment where the patient receives exposure to multiple drugs which can potentially cause anaphylaxis. While antibiotics remain one of the commonest causes of perioperative anaphylaxis, the concurrent antihypertensive medications can make the anaphylactic shock refractory to conventional therapy. Here we report a case of severe refractory anaphylactic shock in a patient on multiple antihypertensive medications. Patient consent has been obtained for this report.

Case description

A 46-year-old (70 kg) lady was scheduled for an open reduction and internal fixation (ORIF) of fracture of lower end of humerus. She had a history of hypertension and hypothyroidism which was controlled on atenolol 25 mg once daily, losartan 50 mg twice daily, prazosin 2.5 mg once daily, nicardipine 20 mg twice daily and thyroxin sodium 100 micrograms once daily.

She had no history of previous surgery or anesthesia exposure but reported allergy to penicillin. However she gave history of oral intake of amoxicillin and erythromycin without any adverse reaction. Pre-anesthesia evaluation was done on admission and all her routine investigations were within normal limits. Except for Losartan, she received all her antihypertensive medication and thyroxin sodium on the morning of surgery. Her initial baseline readings were a pulse rate of 69/min, blood pressure of 171/75 mm Hg and room air saturation (SpO_2) of 97%. General anesthesia was induced with fentanyl 100 micrograms, midazolam 1 mg, propofol 140 mg and vecuronium 6 mg intravenously. Patient was intubated and maintained on isoflurane, nitrous oxide and oxygen through the circle system and intermittent positive pressure ventilation.

The patient was maintaining stable hemodynamics over the next 15 min when she was positioned and part preparation of the surgical site was done. Within minutes of initiating the intravenous injection of cefuroxime (1.5 g diluted in 20 mL of sterile water) the heart rate dropped to 36 min, peak airway pressures increased to above 40 cm of H_20 and blood pressure became unrecordable. By this time only 750 mg cefuroxime had been administered. Further administration of cefuroxime was immediately stopped. A call for help was given and all anesthetic gases were turned off. The patient was switched to manual ventilation with 100% oxygen. Higher resistance to ventilation was appreciated while squeezing the bag of the anesthesia workstation. The bradycardia was initially non-responsive to 0.6 mg of intravenous atropine, but responded to a second dose with heart rate rising to 112/min. The patient developed maculopapular rash all over her body with evident angioedema causing rapid swelling of eyelids, lips and face.

Anaphylaxis was diagnosed and immediately 1 mL of (1:10,000) Epinephrine was administered intravenously along with rapid transfusion of 1000 mL of normal saline, 200 mg of intravenous hydrocortisone and 25 mg of intramuscular promethazine hydrochloride. Her lower limbs were elevated. Simultaneously 10 puffs of salbutamol were delivered into the endotracheal tube. On observing no response, incremental doses of 10 mL (1:10,000) intravenous Epinephrine was administered over 10 min. This resulted in an appreciable peripheral pulse and a blood pressure of 81/30 mm Hg on the non-invasive blood pressure monitor. Bronchospasm started getting relieved with mild chest expansion and faint breath sounds were audible on auscultation. Saturation (SpO_2) increased to 85–90% over the next 5 min the blood pressure again started dropping with very feeble central pulses and became unrecordable very soon. Central venous access was immediately secured through the subclavian route and dopamine infusion was started at 5 microgram/kg/min and increased to 10 microgram/kg/min, resulting in a blood pressure of 80/39 mm Hg over the next 15 min. Suspecting refractory anaphylactic shock, norepinephrine infusion was also started at 2 microgram/min and increased to 5 microgram/min resulting in blood pressure of 92/43 mm Hg with heart rate of 146/min. She became conscious, started breathing spontaneously and responded by eye movements in the next 15 min. The decision was made to postpone the surgery and the patient was shifted to the Critical Care Unit (CCU).

In the CCU, she was put on mechanical ventilation and the initial Arterial Blood Gas (ABG) showed mixed metabolic and respiratory acidosis. She was advised intravenous hydrocortisone 50 mg/6 hourly and ranitidine 50 mg/12 hourly. She needed inotropic support with dopamine 10 microgram/kg/min, norepinephrine 5 microgram/min and epinephrine 2 microgram/min with an aim to maintain blood pressure above 70% of pre-shock levels. Norepinephrine was gradually tapered and stopped over the next 2 h. Blood pressure gradually improved from 99/54 mm Hg to 140/90 mm Hg with heart rate range of 98–113 min by next morning, 24 h after the event. All vasoactive agents were gradually tapered and stopped. She was conscious and responsive to commands. After a T-Piece trial, she was extubated. Post extubation she was able to speak and maintain her vital parameters with oxygen supplementation by mask. Hydrocortisone was stopped on the third day after the event and the patient was shifted to her cabin. Facial swelling gradually reduced and she recovered back to normalcy without any residual effect of the anaphylactic reaction.

Her antihypertensive drugs were restarted 3 days later. She was operated upon after two weeks with perioperative antibiotic coverage of intravenous ciprofloxacin and general anesthesia with propofol, fentanyl and vecuronium for induction and endotracheal intubation, isoflurane, nitrous oxide and vecuronium were used for maintenance of anesthesia. After the surgery, reversal of neuromuscular blockade was done with neostigmine and glycopyrrolate. Following an uneventful intraoperative and postoperative course, she was discharged from the hospital two weeks after her surgery.

Discussion

While the incidence of perioperative anaphylaxis has been reported to be between 1 in 10,000–20,000 anesthesia procedures, it is responsible for 3–10% of the perioperative fatalities.[1] Anaphylaxis therefore is of major concern to the

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