CASE REPORT

Atypical intraoperative anaphylactic shock with ECG changes secondary to non-ruptured hepatic hydatid cyst

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SUMMARY

A 62-year-old woman was admitted to the hospital for removal of hydatid cyst from the liver. Intraoperatively, the patient suddenly became hypotensive with tachycardia and ST segment elevation. There was no erythema, bronchospasm or desaturation. Anaesthetic agents were stopped and oxygen fraction was increased. In view of the recurrence of hypotension, she was admitted to the intensive care unit (ICU) without completion of surgery. She was successfully resuscitated and acute myocardial infarction was ruled out. She was managed for the possibility of anaphylaxis with hydration, dopamine, antihistamin and hydrocortisone. After stabilisation, she was taken back to the theatre and the cyst was then removed. Histopathology confirmed hydatid disease of the liver. The patient was discharged from the ICU and then from the hospital in 6 days. Anaphylaxis secondary to hydatid disease is uncommon; however, the possibility of such a diagnosis in all patients with non-ruptured hydatid disease in the endemic areas that develop intraoperative shock should be considered.

BACKGROUND

This is a prevalent health problem that has a clear message as the possibility of anaphylactic shock with microscopic leak was not thought of in the operating theatre.

CASE PRESENTATION

A 62-year-old woman was admitted to the surgical department with the diagnosis of a large hydatid cyst of the liver (figure 1) and was planned for elective hydatid cystectomy. Her indirect haemagglutination titre was found to be 1:12. Preoperative examination of the cardiovascular and respiratory systems was normal and had no history of allergy.

At the operating theatre, the patient was premedicated and then anaesthesia was induced intravenously with fentanyl, vecuronium and thiopentone. No other medications were given in the operating theatre. Endotracheal intubation was performed smoothly. Continuous monitoring of non-invasive blood pressure (BP), ECG, pulse oximetry and end-tidal capnography (EtCO₂) was performed. Anaesthesia was maintained with N₂O and isoflurane. The patient continued to be haemodynamically stable at the onset of the operation with normal blood pressure. Until approaching the cyst, the haemodynamic signs remain

stable. An intact hydatid cyst was found with no free fluid in the peritoneal cavity.

With the start of cyst dissection, there was a sudden increase in HR to 140 bpm and a decrease in BP to 60/30 mm Hg. The patient did not have erythema in the face or the neck and was easy to ventilate. There was no desaturation. 10 mg ephedrine was administered and the infusion rate of fluids was increased. At this point, isoflurane was switched off and the oxygen fraction was increased to 100%. Auscultation of the chest was normal, with no wheeze. There was no change in EtCO₂ or the airway pressure. A radial arterial catheter was passed instantly to measure blood pressure invasively. It was 80/40 mm Hg. A central venous catheter was also inserted and the central venous pressure (CVP) was measured at 8 mm Hg. After the BP rose to 90/50 mm Hg, the operation was allowed to proceed and cyst dissection was resumed. Owing to recurrent and persistent hypotension, with a BP of 50/30, infusion of dopamine at a rate of 20 µg/kg/h was started. The surgeon at this point verified that the cyst wall was still intact with no macroscopic perforations. In view of some ECG changes (ST segment elevation) noticed on the monitor, suggesting the possibility of acute myocardial infarction, both the surgeon and the anaesthetist elected to postpone the surgery. The abdominal wall

Figure 1 A large rounded lesion with heavy calcification and undulating membranes within it seen in the right subdiaphragmatic region displacing the right haemidiaphragm superiorly and the right lobe of the liver inferiorly. It measures 10.5 cm×8.8 cm×8.6 cm. It is abutting the suprahepatic inferior vena cava medially. Appearances are suggestive of a large hydatid cyst.

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Figure 2 Fibrous, laminated membranous cyst wall with occasional metacystodes of echinococcus identified in the liver cyst. Findings are suggestive of a hydatid cyst.

was closed, and the patient was immediately moved to the intensive care unit (ICU) with a BP of 100/60 mm Hg. In the ICU, the possibility of anaphylaxis secondary to hydatid cyst manipulations was entertained. Hydration, hydrocortisone and antihistamines were used to treat the possible anaphylactic reaction/shock. Serum tryptase was not measured because of its non-availability in our hospital. Myocardial infarction was also excluded by serial cardiac enzymes as well as transthoracic echocardiography. Dopamine was tapered until it was stopped. She was electively ventilated for 36 h, after which she was taken again to the theatre when the same anaesthetic agents were used. The cyst was then excised, and the histopathology report confirmed a hydatid cyst (figure 2).

Postoperatively, and in the ICU, the patient was extubated and then discharged to the surgical ward on day 4. A few days later, she was discharged home.

OUTCOME AND FOLLOW-UP

Discharged home.

DISCUSSION

Anaphylactic reaction is a known complication of cystic hydatid disease. It can occur after microscopic or macroscopic rupture of the cyst with leakage of contents into the peritoneum or blood circulation.¹ In this patient, the cystic walls were intact. We believe that high intracystic pressure must have been the cause of leakage of cystic fluid into the circulation. After reviewing the literature, we could find few reports of anaphylactic reaction/shock to the hydatid cyst with no apparent macroscopic rupture.² Although this condition is not common, it should be considered as one of the differentials in every patient with hydatid disease who develops an intraoperative shock state.³

In this case report, we discussed a case of atypical intraoperative anaphylaxis secondary to a non-ruptured hydatid cyst and its management, which led to favourable patient outcome. Familiarity with the atypical anaphylactic reaction of echinococcosis is very important to prevent both misdiagnosis and improper therapeutic interventions in these cases. It must be recognised that during anaesthesia, hypotension, tachycardia and arrhythmia predominate. Cutaneous symptoms like urticaria, rash and flushing are common in the face, neck and anterior chest, but these signs are often hidden by surgical draping. Bronchospasm occurs less frequently after general anaesthesia.⁴ In incomplete and atypical presentations with symptoms like hypotension and ST segment elevation (as in our patient), the

diagnosis of anaphylactic shock becomes difficult without eliminating other causes such as acute myocardial infarction and hypovolemic shock. However, the diagnosis of anaphylaxis should be established by various immunological tests, like measuring the tryptase.⁵ These tests were not immediately available in our centre, and the need for it was not realised in our patient.

Similarly, anaphylaxis during anaesthesia is uncommon. The effects of this complication range from mild urticaria to life-threatening circulatory shock. The estimated incidences of this complication vary, with a mortality ranging from 3% to 6%.⁶⁻⁷ The most implicated substances used during anaesthesia and surgery include muscle relaxants, antibiotics and latex.⁸

Treatment of anaphylactic shock during surgery consists of stopping the administration of any medication and massive fluid resuscitation with crystalloids, along with the administration of vasopressors and corticosteroids. Epinephrine is the first-line treatment in most guidelines on the perioperative management of anaphylaxis.⁹

The prevention of anaphylaxis of the hydatid cyst is divided into medical and surgical interventions.⁹ Surgical intervention is to avoid over distension of the cyst by injecting scolicide with gentle manipulation of the cyst. The other technique includes the use of laparoscopic removal of the hydatid cyst. The use of histamine receptor blockers and corticosteroids for medical prevention remains controversial.¹⁰

Learning points

- ▶ Anaphylactic shock secondary to the hydatid cyst does occur intraoperatively in the absence of macroscopic rupture.
- ▶ The possibility of allergies to anaesthetic agents in any patient with intraoperative hypotension should be entertained.
- ▶ Treatment of anaphylactic shock during surgery consists of stopping the administration of any medication and massive fluid resuscitation with crystalloids, along with the administration of vasopressors and corticosteroids. Epinephrine is the first-line treatment in most guidelines on the perioperative management of anaphylaxis.

Competing interests None.

Patient consent Obtained.

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