VOLUME - 11, ISSUE - 10, OCTOBER - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Anaesthesiology

A CASE REPORT ON MANAGEMENT OF ANAPHYLACTIC SHOCK DURING HYDATID CYST SURGERY

Dr Aayushi Tomar MD Anesthesia

ABSTRACT Hepatic hydatid cyst (HC) is caused by Echinococcus granulosus.This is still endemic in many parts of the world, and it is a common health problem, especially in the developing countries. The rupture of the Hydatid Cyst can cause anaphylactic shock or even death during surgical treatment.[1] Intraoperative anaphylactic shock is a rare complication. Various causes may be involved. Surgery for hydatid cysts is rarely to be blamed. This is a case report of anaphylactic shock secondary to hydatid-cyst surgery and to describe the mechanisms, treatment principles, and preventive measures for this complication.

KEYWORDS :

INTRODUCTION

Hepatic hydatid cyst (HC) is caused by Echinococcus granulosus. This is still an endemic in many parts of the world, and it is a common health problem, especially in developing countries. Hydatid cyst is commonly seen in the liver. Procedures such as Marsupialization, evacuation of the endocyst and filling up of Cyst with saline are the common practices currently utilized for the treatment of the Hydatid Cyst in the liver. Anaphylaxis during anesthesia is a rare complication. The effects of this complication range from mild urticaria to life-threatening circulatory shock. The estimated incidence of this complication is 1 in 5,000 to 1 in 20,000[2], with a mortality rate of 3% to 6%. All the drugs and substances used during anesthesia and surgery can participate in these reactions. Muscle relaxants, antibiotics, and latex are most commonly involved.[3]. We report a case of anaphylactic shock during hydatid cyst surgery.

CASE REPORT

A 26-year-old woman is scheduled for elective surgery for the hydatid cyst in the liver sections V and VII, diagnosed by computed tomography, and the size was 4× 6 × 5 cm. Patient was 150 cm tall and weighed 54 kg, BMI 24 kg/m2. Her blood pressure was 130. /70 mmHg, pulse rate was 80 bpm. No personal history of allergies or her family history was given by patient. Preoperative cardiovascular and respiratory examinations were normal. Electrocardiogram (ECG) and chest x-ray were unremarkable. Laboratory tests including alanine transaminase, aspartate transaminase, International Normalized Ratio, fibrinogen, urea, creatinine, and blood glucose levels were normal. Blood group and cross match was done.The patient was admitted to the operating room and standard monitoring was established, including heart rate, arterial oxygen saturation (SpO2) and noninvasive pressure (NIP). After catheterization of a peripheral vein, cefazolin 2 g was administered intravenously without any problems. The patient's hemodynamics remained stable. Initial parameters of heart rate (HR) 76beats/min, NIP 128/76 mmHg, SpO2 were 99%, propofol (2 mg/kg), fentanyl (2 g/kg), and cisatracurium (0.15mg/kg) was given. Tracheal intubation with a standard tube was successfully performed using a standard laryngoscope. The patient was placed on the ventilator and anesthesia was maintained with isoflurane (1%–1.5%) in the mixture of nitrous oxide and oxygen (50%:50%). With a tidal volume of 450 mL and ventilation at a rate of 14 breaths/min, SpO2 was 99%, capnography [end-tidal CO2 (ETCO2) was 38-40 mmHg, and peak airway pressure (PAwP) was 21.

Surgical incision was performed and the vitals remained stable. Few minutes after the opening of the second cyst(segment VII), the patient presented with hypotension (NIP: 60/38 mmHg), tachycardia (HR: 120 beats/min) and without desaturation of (SPO2 : 98%). Surgical intervention was discontinued. The inhalation agent (isoflurane) was closed and the oxygen fraction increased to 100%. Lung auscultation was normal and bilaterally symmetrical. EtCO2(39 mmHg) and airway pressure (20)cmH2O were unchanged. Monitoring detected no changes in the electrocardiogram and the surgeon detected no gross signs of infection.skin signs in the form of redness and small hives were found on the face or neck. A preliminary diagnosis of anaphylactic shock was made. A second peripheral venous catheter (16 gauge), and arterial catheter was placed. Fluid resuscitation (saline 0.9%) 500 mL (1500 mL total) and an intravenous bolus of mephentermine (30 mg total) allowed only modest improvement (NIP: 70/46 mmHg) . Epinephrine bolus (100 µg to 300 µg total) was administered and delivered by continuous infusion (0.06 µg/kg/min) through the central venous catheter. This therapy stabilized her hemodynamic status (NIP: 109/56 mmHg and HR: 90 beats/min) and surgery was continued. A bolus of 200 mg hydrocortisone was administered. No additional epinephrine bolus or increase in infusion rate was required for the remainder of the surgery. After removing the surgical drape, the presence of skin marks all over the body wese seen. Anaphylactic shock was strongly suspected. Serum tryptase was not measured because it is not available at our institution. Patient was transferred to the intensive care unit. The postoperative course was unremarkable, she was extubated after 2 hour, and after 4 hours infusion was tapered and discontinued. The patient was discharged after 3 days of hospitalization.

DISCUSSION

Hydatid Cyst is caused by the parasitic invasion caused by the larval form of Echinococcus. Various Surgical techniques are used presently. The disease mostly remains silent. Incidental findings or complications such as spontaneous or anaphylactic shock following rupture have been reported [4]. Symptoms range from mild hives to anaphylactic shock. In bladder cyst surgery, the incidence of this serious complication was variable. The mechanisms of these reactions are complex. Some cases were typically type I hypersensitivity reactions associated with immunoglobulin E in response to high plasma concentrations of Echinococcus antigens [5]. Anaphylaxis or anaphylactic reactions can also be secondary to complement activation with the release of anaphylatoxins.Symptoms vary in severity. Cardiovascular symptoms such as hypotension, tachycardia and arrhythmia predominate during anesthesia. Skin manifestations such as rash, flushing, and urticaria commonly appear on the neck, face, and especially the anterior chest, but these signs are often masked by surgical drapes , and also less sensitive, especially after general anesthesia. With incomplete symptoms (only one symptom such as hypotension, bronchospasm), the diagnosis of anaphylactic shock is made after ruling out other causes (acute myocardial infarction, hypovolemic shock). In our case, anaphylactic shock was attributed to hydatid fluid and occurred away from induction (during drug injection) as other causes were ruled out. Nevertheless, diagnosis of anaphylaxis must be made by

various immunological immunofluorescence and immunoelectrophoretic hemagglutination tests. These tests were not available at our center. Treatment of intraoperative anaphylactic shock is facilitated by prior establishment of monitoring under general anesthesia, vascular access, and airway access.The management consists of cessation of all medications, cessation of transient interventions, cessation of massive fluid resuscitation, and administration of vasopressors and corticosteroids. Fluid exchange should be ensured by the crystalloids. Epinephrine as a vasopressor is first-line treatment in most guidelines for perioperative treatment of anaphylaxis. [6] Our patients received saline, corticosteroids, and epinephrine as boluses and infusions. Thehemodynamic response was favorable and was eligible to continue surgery. Prevention of hydatid cyst anaphylaxis is surgery which avoids excessive expansion of the cysts by gently injecting scolicide and gently manipulating the cysts. [7] . Medical prophylaxis, including histamine H1, H2 receptor blockers, and corticosteroids, remains controversial but antihistamines may prevent further histamine binding and corticosteroid diminishes airway edema and prevent recurrence of the symptoms.Extubation should not be done immediately.

Continuous monitoring and delayed extubation will be beneficial for the patient as edema and inflammation can remain for a long time.[1]

CONCLUSION

Anesthesia management during the surgery for hydatid cysts is often done keeping in mind that Anaphylaxis can occur despite all the precautionary measures. Aside from bleeding and hypovolemia, the development of hemodynamic instability suggests a diagnosis of anaphylaxis and specific treatment should be initiated. Given the severity of anaphylaxis, all preventive medical and surgical measures may be justified. A close monitoring for early diagnosis and appropriate management is necessary for the better patient outcome.

REFERENCES

1. Davarci, I., Tuzcu, K., Karcioglu, M., Yetim, I., Aydogan, A., & Turhanoglu, S. (2014). Anaesthetic Management of Anaphylactic Shock Caused by Nonruptured Hydatid Cyst of the Liver. The West Indian medical journal, 63(5), 545–547.
2. O. Harboe T, Guttormsen AB, Irgens A, Dybendal T, Florvaag E. Anaphylaxis during anesthesia in Norway: A T-year single center follow-up study. Anesthesiology 2005;102:897-903.
3. Mertes PM, Alla F, Tréchot P, Auroy Y, Jougla E. Groupe d'Etudes des Réactions Anaphylactoïdes Peranesthésiques. Anaphylaxis during anesthesia in France: An 8-year national survey. J Allergy Clin Immunol 2011;128:366-373.
4. Boyano T, Moldenhauer F, Mira J, Joral A, Saiz F. Systemic anaphylaxis due to hepatic hydatid disease. J Investig Allergol Clin Immunol 1994;R:158-159.
5. Khoury G, Khoury SJ, Soueidi A, Nabbout G, Baraka AL Shock complicating laparoscopic treatment of hydatid cysts of the liver. Surg Endosc 1998;12:452-454.
6. Kloeck W, Cummins RO, Chamberlain D, Bossaert L, Callanan V, Carli P, et alL Special resuscitation situations: An advisory statement from the International Liaison Committee on ResuscitationL Circulation 1997;95:2196-2210.
7. Kosar A, Orki A, Haci Ibrahimoglu G, Kiral H, Arman BL Effect of capitonnage and cystotomy on outcome of childhood pulmonary hydatid cystsL J Thorac Cardiovasc Surg 2006;132:560-564.