

INTRAOPERATIVE ANAPHYLACTIC REACTION IN PATIENT FOR HYDATID CYST SURGERY

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ABSTRACT

Anaphylactic reaction during intraoperative period is a rare occurrence. There can be a different causes for it. We report a case of anaphylactic reaction during open surgery for hydatid cyst of liver in 27 years old woman which was managed successfully.

Key Words: Anaphylactic Reaction; Anaesthesia; Hydatid Cyst; Liver; Intraoperative

Introduction

Hydatid cyst disease is quite common in our country. It is an infectious disease caused by larval form of *Echinococcus granulosus*. There is a constant threat of anaphylactic reaction during surgery for hydatid cyst, as hydatid fluid is antigenic which may spill during surgery resulting in serious IgE mediated reaction. During intraoperative period, sudden onset of cardiovascular collapse and bronchospasm should raise the suspicion of anaphylactic reaction, particularly during surgery for hydatid cyst.^[1] We report a case of intraoperative anaphylactic reaction during surgery for hydatid cyst of liver and its management.

Case Report

A 27 year old woman weighing 45 kg was admitted to New Civil Hospital, Surat with pain in abdomen, vomiting and itching with white lesion all over body for 8 days. No hypersensitivity reaction was described in her past medical history. Evaluation revealed a 9 x 9 x 8.1 cm³ sized hydatid cyst involving segments 8 and 7 of right lobe of liver and 3.6 x 3.2 x 2.9 cm³ sized cyst involving segment 6 of right lobe of liver suggestive of multiple hydatid cyst of liver. She was subsequently scheduled for exploratory laparotomy for excision of cyst. Preoperative examination of cardiovascular and respiratory system were normal. Laboratory evaluation, including haematological and biochemical profile were within normal limits.

The patient was premedicated with injection Glycopyrrolate 0.2 mg, Tramadol 75 mg and Ondansetron 4 mg intravenously. Chlorpheniramine 1 mg, Dexamethasone 8 mg, Hydrocortisone 100 mg were

given intravenously in the morning as prophylaxis for allergic reaction. In the operation room, routine monitors (Electrocardiogram, non-invasive blood pressure, manual blood pressure, pulse oximetry) were attached. Epidural anaesthesia in addition to General anaesthesia was given. Epidural space was located with touhy needle 18G at L1-L2 interspace and epidural catheter advanced through it under strict aseptic precaution. Anaesthesia was induced with thiopentone sodium (250 mg) and succinylcholin (100 mg). Tracheal intubation was performed using 7.5 mm internal diameter cuffed endotracheal tube. Temperature, capnography (Etco2) and urine output monitoring was also initiated. Ventilation was maintained with intermittent positive pressure ventilation at the rate of 12 bpm and tidal volume of 400ml. Anaesthesia was maintained with Halothane in oxygen and nitrous oxide (50:50) along with top-ups of Atracurium. Analgesia was provided using epidural supplementation with Bupivacaine (0.25%) 8 ml. At the beginning of the operation, patient was hemodynamically stable with a heart rate 92bpm, Blood pressure 120/82 mmHg, Spo2 98%, Etco2 36 mmHg and peak airway pressure 20 cm H2O.

After injection of scolical agent (cetrimide) patient developed sudden and persistent hypertension (systolic blood pressure of 60 mmHg), tachycardia (pulse rate 124 bpm) and a fall in Spo2 to 87%. Halothane and N2O were discontinued, 100% O2 given. Second peripheral i.v line was secured with 16G cannula and fluid resuscitation was started along with i.v bolus of ephedrine (30 mg total). Hypotension did not respond and peak airway pressure increased to 30 cm H2O. On auscultation of chest, bilateral rhonchi were present. Surgeons were asked to hold surgery. A preliminary diagnosis of anaphylactic shock was made after excluding other

causes. 0.1 mg adrenaline was given i.v stat followed by infusions, Dopamine at 10 µg/kg/hr and adrenaline at 0.05 µg/kg/min. Hydrocortisone 250 mg, Deriphylline 2 ml and Dexamethasone 8 mg were given. Total 2L of crystalloids and 500 ml of colloids were given. Gradually the blood pressure increased to 100 mmHg, peak airway pressure returned to normal (17 cm H₂O) and SpO₂ to 99%. Surgery was allowed to continue. Excision of cyst was performed successfully.

The patient was shifted to surgical ICU, where she received ventilatory support for 5 hours. Adrenaline infusion at the rate of 0.05 microgm/kg/min was continued for 2 hours, than gradually tapered and stopped after 3 hours. After 4 hours postoperatively, patient regained consciousness, however she still required inotropic support with dopamine. Patient weaned from ventilator and put on T-piece for 30 minutes and extubated smoothly. Dopamine was discontinued after 12 hours. No other complications were reported during post-operative period. Bronchodilator therapy and postural physiotherapy were continued in ICU. She was discharged from the ICU and transferred to the ward on day third, from there she was discharged on 8th day with clinical recovery.

Discussion

Hydatid disease is a parasitic infestation caused by the larval form of *Echinococcus granulosus*. During surgical removal of the hydatid cyst, it may get ruptured, releasing highly antigenic content in the body cavity or circulation, which causes Ig E mediated anaphylactic reaction. Some reports have cited a 0.2% -3.3% incidence of anaphylactic shock following surgical removal of hydatid cyst.^[2] Overall, during medical and surgical procedures, muscle relaxants have been shown to be responsible for 60%-70% of anaphylaxis cases, latex for 10%-20%, Antibiotics for 5%-20%, and colloids and induction agents for about 3%-5% of cases.^[3,4] The common features of anaphylactic reaction are hypotension, tachycardia, desaturation, increase airway pressure & decrease etco₂. Thus, Anaphylaxis, involves almost all the organ system including cardiovascular, respiratory, GIT, CNS, genitourinary system. Clinical features may vary according to severity of reaction.^[4] During incomplete presentation it is difficult to put a diagnosis of Anaphylaxis.

In our case, the haemodynamic and respiratory problems appeared to be primarily related to anaphylaxis due to

hydatid cyst contents. Nevertheless, differential diagnosis with drug or latex induced anaphylactic shock, hypovolemic shock, acute myocardial infarction, carcinoid syndrome and tension pneumothorax in a patient under mechanical ventilation should also be considered. In our patient, sudden haemodynamic collapse occurred during the handling of hydatid cyst contents. Anaphylaxis may be triggered by multiple agents, one of this is the hydatid cyst due to its high antigenicity. Allergic reaction during hydatid cyst operation can occur due to interaction of an allergen (hydatid fluid) with specific immunoglobulin E (IgE) antibodies, which are present on mast cells and basophils in sensitized individuals. The interaction stimulates the cells to release inflammatory mediators, e.g. histamine, leukotriene and tryptase, which account for clinical features.^[5,6] These can be mild as pruritus and urticarial or can be serious as an anaphylactic shock.^[7] In the case of cardiovascular collapse, bronchospasm and erythema, early clinical diagnosis is very important.

Since administration of corticosteroids and H1-H2 receptor antagonists are beneficial in reversing the effect of histamine release.^[8] So, chlorpheniramine maleate and ondansetron were administered to the patient at induction. The treatment of anaphylactic shock during surgery consist of stopping administration of any medication, stopping momentary intervention, massive fluid resuscitation and administration of vasopressor and corticosteroids. We stopped administering anaesthetic gases and ventilated the patient with 100% oxygen. Fluid replacement should be assured by crystalloids and colloids. For vasopressor, Epinephrine is the first line treatment in most guidelines on perioperative management of anaphylaxis.^[9,10] Glucocorticoids are often administered in acute phase of anaphylactic shock, although their effects are delayed several hours, a beneficial role has been suggested to prevent the recurrence of manifestations of anaphylaxis in the late phase.^[11] Our patient has received a total 2 L of fluid, Dopamine, Corticosteroids, Bronchodilator and Epinephrine by infusion.

Conclusion

During surgery for hydatid cyst Anaesthetist should always consider the possibility of an anaphylactic reaction especially when there is an unexplained cardiovascular collapse. For favourable outcome, high suspicious, early diagnosis & prompt treatment is essential.

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