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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/18608

DOI URL: <http://dx.doi.org/10.21474/IJAR01/18608>



RESEARCH ARTICLE

ANAPHYLACTIC SHOCK DURING HYDATID CYST SURGERY : CASE REPORT

M.A. Elhasnaoui¹ and ES. Ounci²

1. Critical Care Unit, Provincial Hospital of Khenifra, Morocco.
2. Critical Care Unit, Mohamed VI Academic Hospital, Tangier, Morocco.

Manuscript Info

Manuscript History

Received: 26 February 2024

Final Accepted: 30 March 2024

Published: April 2024

Key words:-

Anaesthesia, Anaphylaxis, Hydatid Cyst

Abstract

Intraoperative anaphylactic shock is an unusual complication. Different causes can be involved. Surgery of hydatid cyst is rarely responsible. About a case report of anaphylactic shock due to hydatid cyst surgery, the authors discuss the mechanisms, principles of treatment, and prevention measures of this complication.

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Introduction:-

Hydatid cyst (HC) is a parasitic disease caused by *Echinococcus granulosus* and *E. alveolaris*. HC may develop anywhere in the body but most commonly develops in the liver (50%-77%) and lungs (18%-35%). The majority of patients are asymptomatic. Cysts may be symptomatic depending on their size, location, and complication. One of the common complications of HC is cyst rupture, spontaneously by external traumas or during surgical operations. Rupture of HC can cause anaphylactic shock or even death during surgical treatment. We report a case of anaphylactic shock during hydatid cyst surgery.

Case Report

A 24-year-old woman was scheduled for elective surgery for a two liver hydatid cyst located in segment VII with a dimension of 4 × 5 × 4.5 cm. At the preoperative visit the patient's blood pressure was 125/60 mmHg, with a pulse rate of 75 beats/min. No personal or familial history of allergy was documented. Preoperative examinations of the cardiovascular and respiratory systems were normal. Electrocardiography (ECG) and chest X-ray were unremarkable. Laboratory tests including alanine transaminase, aspartate transaminase, international normalized ratio, fibrinogen, urea, creatinine, and blood glucose concentrations were normal. The patient was admitted in operative room where a standard monitoring including heart rate, arterial oxygen saturation (SpO₂), and non invasive pressure (NIP) has been installed. After a catheterization of a peripheral vein, an IV 2 g of cefazolin was administered without problems notably; the hemodynamic of patient remained stable. The initial parameters with a heart rate (HR) at 78 beats/min, NIP at 124/76 mmHg, and SpO₂ at 99% have allowed induction of anesthesia with propofol (3 mg/ kg), fentanyl (2.5 µg/kg), and rocuronium (0.6 mg/kg). Tracheal intubation with a normal tube was successful realized with a standard laryngoscope. The patient was connected to respirator and anesthesia was maintained with isoflurane (1%–1.5%) in a mixture of nitrous oxide and oxygen (50%:50%). With ventilation by a tidal volume of 400 mL, and rate of 14 breaths/min, SpO₂ was 99%, capnography [endtidal CO₂ (ETCO₂)] was 39 mmHg and peak airway pressure (PAWP) was 21 cmH₂O. Few minutes after the ponction of the hydatid cyst, sudden and persistent desaturation (SpO₂ 20%), hypotension (systolic blood pressure 60 mmHg), hypocarbia (EtCO₂ 10 mmHg) and tachycardia (heart rate 140/min) were noted. Isoflurane was discontinued and fluid resuscitation was started. Persistent desaturation could not be corrected with institution of 100% oxygen.

Corresponding Author:- M.A. Elhasnaoui

Address:- Critical Care Unit, Provincial Hospital of Khenifra, Morocco.

Hypotension did not respond to fluids, and peak airway pressure increased to 40 cmH₂O. On auscultation of the patient's chest, bilateral rhonchi were present. Generalised oedema with presence of erythema was observed. A diagnosis of anaphylactic reaction was made. A 200- μ g bolus of adrenaline was administered intravenously to the patient, which was repeated three times. Hydrocortisone succinate (100 mg) was administered intravenously. The blood pressure gradually improved and in the next two hours, the patient's SpO₂ increased to 95% and the systolic blood pressure increased to 100 mmHg. An enucleation and marsupialisation was then performed successfully. The patient was then moved to intensive care unit, where she received ventilatory support for 24 hours. Adrenaline infusion was given for 24 hours and gradually tapered then stopped. The trachea was extubated on the second postoperative day, and the patient was discharged four days.

Discussion:-

It has been estimated that anaphylaxis is responsible for one life-threatening situation in every five to 10,000 anaesthetic procedures, and that once a reaction starts, the mortality rate is 3%–6% (1). 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, hypovolaemic shock, acute myocardial infarction 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. Infection with *Echinococcus granulosus* or *Echinococcus multilocularis* leads to cystic lesions in the liver and lungs (2). During surgical removal of the hydatid cyst, it may get ruptured, releasing highly antigenic contents in circulation, which causes IgE-mediated anaphylactic reactions (2). The treatment of anaphylactic shock during surgery is facilitated by the prior installation of monitoring, of vascular access and airway access if general anaesthesia. This treatment consists of stopping administration of any medication, stopping momentary intervention, massive fluid resuscitation, and administration of vasopressor and corticosteroids. Fluid replacement should be assured by crystalloids. For vasopressor, adrenaline is the first-line treatment in most guidelines on perioperative management of anaphylaxis (3-4). 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 (5). Our patient has received a saline solution, corticosteroids, and epinephrine by bolus and infusion. Hemodynamic response was good and authorized to continue surgery. Prevention of anaphylaxis of hydatid cyst is surgical; it is to avoid overdistension of the cyst by soft injecting of scolicide and gentle manipulation of the cyst. Other techniques have been described (6,7). Medical prevention, including histamine H₁, H₂ receptor blockers, and corticosteroids, remains controversial (8). Reporting of such rare perioperative events is crucial for future references. An anaphylactic reaction has to be taken into serious consideration whenever a hydatid cystectomy is performed, especially in the event of a sudden haemodynamic collapse. An early diagnosis and correct treatment are essential to ensure a favourable patient outcome.

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