

Anaphylaxis due to Liver Hydatid Cyst during the Operation

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ABSTRACT

Hydatid cyst (HC) is a parasitic disease caused by *Echinococcus granulosus* and *E. alveolaris*. It is still a serious health problem in endemic regions. One of the common complications of HC is cyst rupture, spontaneously by external traumas or during surgical operations. Rupture of a HC can cause anaphylactic shock. Our case was a 34-year-old female who had a HC in her liver. She developed sudden hypotension, tachycardia, flushing, edema, and bronchospasm intraoperatively. We managed her with antihistamines, steroids, and supplementary fluids. After the operation, she was transferred to the ICU for further management. The trachea was extubated at the fifth hour of the operative day, and the patient was admitted to the surgical ward on the first postoperative day. In the management of anaphylactic reactions of HCs, quick diagnosis and early management are important for successful resuscitation.

Keywords: Anaphylactic shock, hydatid cyst, liver

INTRODUCTION

Hydatid cyst (HC) is a parasitic disease caused by *Echinococcus granulosus* and *E. alveolaris*. It is still a serious health problem in endemic regions, especially in Turkey, the Mediterranean region, South America, New Zealand, and Middle East. HC may develop anywhere in the body but most commonly develops in the liver (50%-77%) and lungs (18%-35%) and occasionally in other organs such as the spleen (0.5%-8%), bone, muscle, brain, and kidney (1, 2). The majority of patients are asymptomatic (3). Cysts may be symptomatic depending on their size, location, and complication (1, 3, 4). One of the common complications of HC is cyst rupture, spontaneously by external traumas or during surgical operations (4, 5). Young age, superficial localization, trauma, and large size of cysts are the risk factors for cyst rupture (2). Rupture of HC can cause anaphylactic shock or even death during surgical treatment (5, 6). Anaphylactic and anaphylactoid reactions during anesthesia are major causes of concern for anesthesiologists (7). Tachycardia, hypotension, significant bronchospasm, and urticaria should alert the anesthesiologist for anaphylaxis (6). We report the case of a patient who developed anaphylaxis and was successfully treated during hepatic HC surgery.

CASE PRESENTATION

We report this case after patient approval. A 34-year-old woman weighing 60 kg presented with complaints of abdominal pain. Computed tomography revealed a 5 cm × 5 cm × 5 cm HC in segment 4a of the liver. She was subsequently scheduled for cystectomy. Preoperative examinations of all systems were normal. Laboratory examinations were normal. In the operating room, routine monitorization (electrocardiogram, noninvasive automated blood pressure, pulse-oximeter, temperature, capnography, and urine output) was performed. For anesthesia induction, remifentanyl 0.2 µg/kg/min (Rentanil[®] 2 mg, Vem, Istanbul, Turkey), propofol (150 mg) (Propofol 1%[®] Fresenius, Istanbul, Turkey), and rocuronium (50 mg) (Myocron[®] 50 mg, Vem, Istanbul, Turkey) were intravenously administered. For tracheal intubation, a 7.5-mm internal diameter cuffed endotracheal tube was used. Ventilation was maintained with volume control ventilation at a rate of 12 breaths/min and a tidal volume of 450 mL. Anesthesia was sustained by desflurane in oxygen and air (50:50). Pheniramine maleate (45.5 mg) (Avil[®], Sandoz, Istanbul, Turkey) and dexametazon (8 mg) (Deksamet[®], Osel, Istanbul, Turkey) were given for the prophylaxis after induction.

There was no problem with respect to anesthesia during the 15 minutes. While aspirating the cyst, sudden and persistent desaturation (SpO₂: 70%), hypotension (55/35 mmHg), hypocarbia (EtCO₂: 10 mmHg), bradycardia (heart rate: 40 /min), bronchospasm, and increased peak airway pressure were noted. Flushing in the upper part of the patient's body was

observed. Therefore, a diagnosis of anaphylactic reaction was made. Desflurane was discontinued, the lungs were ventilated with 100% oxygen, and rapid fluid resuscitation was started. Methylprednisolone (80 mg) (Prednol-L^R Mustafa Nevzat, Istanbul, Turkey) and ranitidine (50 mg) (Ranitab^R, Deva, Istanbul, Turkey) were used. An invasive arterial catheter was inserted, and arterial blood gas analysis was performed. After 15 min, the patient's SpO₂ was 95% and arterial systolic blood pressure was 100 mmHg. Following hemodynamic stabilization, cystectomy was successfully performed. After surgery, the patient was transferred to the ICU. The trachea was extubated at the fifth hour of the operative day, and the patient was admitted to the surgical ward on the first postoperative day.

DISCUSSION

The incidence of anaphylaxis during anesthesia and perioperative period ranges from 1/6,000 to 1/20,000, and the estimated mortality rate is 3%-6% (5, 6). Anaphylactic reactions during anesthesia is commonly due to muscle relaxants, local anesthetics, antibiotics, latex, chlorhexidine, hypnotics and inhalant agents, protamine, colloids, and opioids (8).

The incidence of intraoperative anaphylaxis due to HC has been reported to be 0.2%-3.3% (9). It varies from mild hypersensitivity reaction, convulsions, and coma to fatal anaphylactic shock. Tachycardia, hypotension, significant bronchospasm, and urticaria are the main symptoms that should alert caregivers for anaphylaxis during general anesthesia (5, 6). Surgical procedures (marsupialization, evacuation of the cyst elements, and filling the cyst with saline), percutaneous drainage, and administration of a sclerosing agent such as 96% alcohol and 1% polidocanol under ultrasound guidance are the general treatment modalities for HC in the liver (4, 6). Not only release of the highly antigenic hydatid fluid into the systemic circulation but also the scolicalid agents can cause anaphylactic reactions (5, 6).

In this case, antihistamines and corticosteroids were used to avoid anaphylactic reactions, as per recommendations by some reports after induction (6). However, sudden and permanent desaturation, severe hypotension, hypocarbia, and tachycardia were observed during the cyst excision. We suspected anaphylactic reaction, and treatment was started to restore both circulatory and respiratory systems (5, 6). First steps in the treatment are removal of the etiologic factor, provision of 100% O₂ support, and stopping the anesthetic agents (5, 7). Epinephrine is the most appropriate drug of choice in the management of bronchospasm and massive peripheral vasodilatation (5, 6). Some reports have advised use of vasopressors with alpha and beta-stimulating agents (7). In addition to epinephrine, intravascular volume, vascular tone, and cardiac output should be supported with colloid and crystalloid fluids (6, 7). Antihistamines (H1 and H2) and corticosteroids are prophylactically

useful (5, 6). Extubation should be delayed because of airway obstruction (6).

In our case, we stopped inhalation anesthetics, administered 100% oxygen, and started colloid and crystalloid fluids. Then, we administered antihistamines and corticosteroids. We received a response within 15 min, and extubation was delayed.

In conclusion, HC is endemic in our region; hence, we not only encounter these patients during HC surgery and percutaneous drainage but also encounter anaphylaxis in emergency departments, in the ICU, and during other surgical operations without rupture of HC.

Informed Consent: Informed consent was obtained from the patient.

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