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Case Report

# The efficacy of prophylaxis for anaphylaxis in cyst hydatid surgery

Uğur Goktas[a], Nureddin Yuzkat[a,*], Yasemin Isik[a], M. Bilal Cegin[a], Ayşe Avsar[b]

[a]*Department of Anesthesiology and Reanimation, Yuzuncu Yil University, Faculty of Medicine, Van, Turkey*
[b]*Department of Anesthesiology and Reanimation, Van Education and Reseach State Hospital, Van, Turkey*

**Abstract.** Hydatic cyst is caused by a parasite called *Echinococcus granulosus* which found in agriculture and animal husbandry and environmental health and preventive medicine measures are inadequate in all societies. People mainly get the disease by dogs which have illness and with the consumption of contaminated vegetables and water. 14 year old female patient, preoperative physical examination and laboratory findings were normal. Abdominal ultrasonography was compatible with the view of hydatic cysts. For prophylaxy of anaphylaxis, intravenous methylprednisolone and pheniramine maleate were performed. While placing 6F catheter into the cyst cavity by using modified Seldinger method, sudden hypotension and arrhythmia were observed. Intravenously adrenaline and atropine were administered. Colloid and crystalloid infusion was started quickly. Decrease in systolic blood pressure up to 35mmHg anaphylactic reaction was thought. Soon bronchospasm developed and $SpO_2$ dropped to 72%. Spontaneous respiration started 30 minutes after the induction and blood pressure was measured 70/50 mmHg, $SpO_2$:92%. After the completion of the radiological intervention patient was taken to intensive care unit with intubated. After 8 hours, the onset of anaphylaxis symptoms, the patient was extubated.. 24 hours after the surgery patient was sent to ward of pediatric surgery. As a result, for the hydatid cysts invasive procedures although prophylaxis for the anaphylaxis has been given, anaphylaxis still occurred. But the prophylaxis may reduce the mortality and make the anaphylaxis milder.

Key words: Anaphylaxis, hydatic cyst surgery, efficacy prophylaxis

## 1. Introduction

Hydatic cyst is caused by a parasite called *Echinococcus granulosus* (EG) which is found in areas dealing with agriculture and animal husbandry and also in areas with inadequate environmental health and preventive medicine (1). People mainly get the disease by dogs which have illness and with the consumption of contaminated vegetables and water. The most frequent localizations are liver (60-70%) and lung (20-25%) (2). Hydatic cyst can cause anaphylaxis by surgery, traumatic intervention or spontaneous. Anaphylactic shock may occur by the high antigenic cyst fluid passing into the bloodstream which activates IgE secretion and then histamine releasing (3). During anesthesia (4), anaphylactic reactions have been seen in 0.2-3.3% of cases and in these anaphylactic reactions mortality rate varies between 3-5% (3).

In this paper, during invasive radiologic intervention, although the prophylaxis has been applied, anaphylaxis developed and we wanted to emphasize that there is insufficient effectiveness for prophylaxis in cases of anaphylaxis hydatid cysts.

## 2. Case report

14 year old female patient weighting 41 kg with right upper quadrant abdominal pain for three days was admitted to the emergency department. In addition, nausea, vomiting, and non-specific symptoms such as weakness accompany to the pain. The patient's preoperative physical examination and laboratory findings were normal.

This study was presented as an poster presentation in 45th National Congress of the Turkish Anesthesiology and Reanimation Congress, 26-30 October 2011, Antalya, Turkey.

*Correspondence: Nureddin Yuzkat, MD.
Yuzuncu Yil Universitesi, Tip Fakultesi, Dursun Odabaş Tip Merkezi, Anesteziyoloji Anabilim Dalı, 65080, Zeve Kampüsü, Van, Turkey
Phone: +90 5052294728
Fax: 00904322122651
E-mail: nyuzkat@gmail.com

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Abdominal ultrasonography demonstrated the view of regular margins of homogeneous and hypoechogenic left lobe of the liver with the size of 6x4.5x5.5cm. This was consistent with hydatid cyst on the ultrasonographic images, and it was Type CE1 according to cyst proposed WHO standardised classification (5).

Perioperative prophylactic medications were started to the patient. Cyst was planned with a one-stage procedure that consisted of puncture of the cysts under guidance with ultrasound, aspiration of fluid, injection of hypertonic saline solution and reaspiration, so percutaneous drainage was designed in the request of the patient under general anesthesia, however this procedure is applied under to the general anesthesia in pediatric patients.

Preoperative patient's noninvasive blood pressure (BP), electrocardiography (ECG), heart rate (HR), peripheal oxygen saturation ($SpO_2$) monitoring were recorded. BP was 110/60 mmHg, HR was 105 beat/min, $SpO_2$ was 98%. Intravenous 0.9% NaCl fluid was inserted with 22 gauge branüle. Intravenous (iv) 100mg propofol, 50µg of fentanyl and 4mg vecuronium was given for induction of anesthesia. Patient was intubated with size 6 and cuffed endotracheal tube. For prophylaxy of anaphylaxis, iv 60mg methylprednisolone, 40mg pheniramine maleate were administered. To prevent gastrointestinal side affects, iv 50mg ranitidine was administered. Anesthesia was maintained with 50% oxygen, 50% nitrous oxide and 1-2.5 % sevoflurane.

Seldinger method performed with ultrasound-guided percutaneously to lumen of hydatic cyst in liver. 10mL of clear liquid in the cyst cavity was drained, and 3% hypertonic solution was given into the cyst. While placing 6F catheter into the cyst cavity by using modified Seldinger method, sudden hypotension (BP:56/42 mmHg, HR:37 beat/min) and arrhythmia were observed. Patient's lower extremities lifted. Sevoflurane and nitrous oxide was closed and ventilated with 100% oxygen. iv 0.5mg adrenaline and 0.5mg atropine was performed. Decrease in systolic blood pressure up to 35mmHg anaphylactic reaction was thought and adrenaline was given in 2-3 min intervals and iv 8mg dexamethasone was administered. In the mean time additional blood vessel routes opened, invasive arterial monitoring was performed. Colloid and crystalloid infusion was started quickly. Soon bronchospasm developed and $SpO_2$ dropped to 72%. Rapidly aminophylline 0.5mg/kg/min and dopamine 10µg/kg/min infusion was started. After the start of dopamine infusion BP was 55/20 mmHg and HR was 60beat/min, $SpO_2$ was 85%. Bronchospasm was declined after admistered of adrenaline iv bolus 5 times in 3 min intervals.

Spontaneous respiration started 30 minutes after the intubation and blood pressure was measured 70/50 mmHg, HR: 150beat/min, $SpO_2$: 92%. After the completion of the radiological intervention patient was taken to intensive care unit with intubated. The patient was extubated after 8 hours onset of the anaphylaxis. BP was 110/60 mmHg HR: 108beat/min, lung sounds natural, $SpO_2$ was 97%. 24 hours after the surgery patient was sent to ward of pediatric surgery.

## 3. Discussion

Hydatic cyst is an disease of the larval stage of *Echinococcus granulosus* (6). Incidence of the illness in Turkey is 2/100.000 (7), and the most common effected organ is liver (6). People mainly get the disease by dogs which have illness and with the consumption of contaminated vegetables and water (6). Patients with hydatid cysts, similar to patients with simple cysts, are most often asymptomatic, but pain may develop as the cyst grows. The procedure was performed under local anesthesia in adults, under general anesthesia in pediatric patients (8). Hydatic cyst can cause anaphylaxis by surgery, percutaneous drainage or spontaneous. Anaphylactic reaction and shock may occur after the high antigenic cyst fluid spread out (4). In anaphylaxis; urticaria, rash, bronchospasm, laryngeal edema, wheezing, tachycardia, bradycardia, hypotension, cardiovascular collapse, abdominal cramp, nausea, vomiting, diarrhea can be seen. Some of these symptoms may not be seen under the anesthesia or can be seen insignificantly. The major findings during general anesthesia, as seen in the case we presented, are hypotension, bronchospasm, and urticaria (9).

Bostan et al. (10) reported that ruptured of an hepatic cysts during surgical treatment induce anaphylaxis . Otuzbir et al. (11) reported that in hydatid cyst surgery during the discharging of the cysts, sudden hypotension, bradycardia, urticaria, bronchospasm and cyanosis developed. Additionally, an anaphylactic reaction during laparoscopic treatment of hydatid cyst was reported in another case (12). 16 year old case with anaphylaxis due to ruptured hydatid cyst has been treated with antihistamine and corticosteroid therapy and taken into emergency surgery. The authors reported that prophylaxis could reduce the severity of the reaction in anaphylaxis (13-15). For this reason some authors recommend prophylaxis for hydatid cyst surgery and hydatid cyst interventional radiology (10,13,14). Bostan et al. (10) although uses of corticosteroid,

antihistamine and aminophylline has secondary importance, corticosteroids may be useful in combination with $H_1$ and $H_2$ blocker agents. However, in the literature, there are cases that reported anaphylaxis while taking methylprednisolone, pheniramine hydrogen maleat in advance (4,15). Although Gülsüm et al. (4) administered prophylactic antihistamines and streroids, anaphylaxis developed. In our case, although antihistamine and corticosteroid were given for prophylaxis, anaphylaxis developed. Anaphylactic reaction could occur during insertion of the catheter to cyst cavity and anaphylaxis could occur due to some of the cyst contents passed through the blood circulation.

As a result, Yüceyar et al (15), Gülsüm et al. (4) and our cases show that although prophylactic treatment has been given for the anaphylaxis, anaphylaxis can still occur during the invasive procedures of hydatid cysts. Prophylaxis does not prevent anaphylaxis all the times, but, anaphylaxis may occur or pass in a more lenient clinical course. Therefore, perioperative cardioversion, intubation equipment and oxygen and emergency drugs should be provided.

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