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Case Report

# Anaphylactic Shock Diagnosed with Bedside Abdominal Ultrasonography and Computerized Tomography

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## Highlights

1. Patients with hydatic cyst rupture may present with atypical anaphylactic shock signs such as pruritus, dyspnea and fatigue in endemic areas.

2. If bedside ultrasonography of the liver in such patients indicates cysts, immediate anaphylaxis treatment with epinephrine is recommended. Second line therapies should also be given.

3. Best diagnostic approach is abdominal computerized tomography.

## Abstract

**Aim:** A comatose patient otherwise normal with no clues of medical history is a predicament not easy to solve. Focused abdominal sonography in trauma (FAST) may also help physicians to guide the diagnosis in cases of severe shock with unknown cause.

**Case:** Here, we present a 29-year-old man with no known medical history who was brought to our emergency department (ED) intubated due to unconsciousness, hypotension, severe dyspnea and pruritus. On arrival to our ED, his pulse was filiform, and his extremities were cold and cyanotic. FAST examination to rule out trauma showed anechoic cysts in liver. His abdominal CT revealed ruptured pouch of a hydatic cyst. He was hospitalized in ICU and in the surgery clinics for four and two days after surgery, respectively. He was discharged with full recovery.

**Conclusion:** when patients with severe shock signs admit EDs in areas where animal husbandry is common, anaphylaxis due to hydatic cyst rupture should be kept in mind. FAST and ensuing CT can give clues about cysts in the liver.

**Keywords:** Anaphylactic Shock; Severe Dyspnea; Hydatic Cyst Rupture

## Introduction

A comatose patient otherwise normal with no clues of medical history is a predicament not easy to solve. A wide range of diseases including severe infections, intracranial pathologies, drug overdose and many other shock reasons should be ruled out.

Focused abdominal sonography in trauma (FAST) has settled down as a routine emergency practice. However, it may also help physicians to guide the diagnosis in cases of severe shock with unknown cause.

Here, we present a 29-year-old man with no known medical history who was brought to our emergency department (ED) intubated due to unconsciousness, hypotension, severe

dyspnea and pruritus. Bedside ultrasonography guided us for possible diagnosis. Computerized abdominal tomography gave detailed information.

## Case

A 29-year-old man was brought to our ED intubated with ambulance. His relatives told that he had complained of non-specific symptoms such as malaise, fatigue, tiredness, inappetence, pruritus and abdominal pain for three days. After he had woken up at night, he became unconscious and there was fuming at mouth accompanying with jerks and urinary incontinence. Paramedics found the patient with a Glasgow Coma Scale score of 5. He had flexor response to painful stimuli and prominent wheezing. He was intubated on scene.

On arrival to our ED, he was unconscious, his pulse was filiform, and his extremities were cold and cyanotic. His pupils were isochoric with intact light reflexes. His vitals were as follows: Blood pressure: 70/40 mmHg, pulse 77/min, sat O2 100% under whole oxygenation, body temperature: 36.1ºC. FAST examination to rule out trauma showed anechoic cysts in liver (Figure 1). There was no free fluid. His brain and chest computerized tomography (CT) was normal. However, his abdominal CT revealed ruptured pouch of a hydatic cyst (Figure 2).

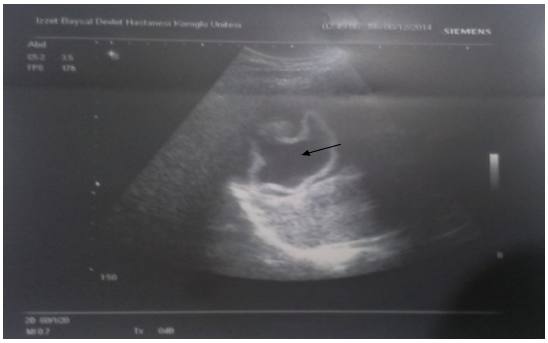

**Figure 1**. Focused abdominal sonography of the patient showed a cyst approximately 60x30 mm in diameters that has well demarcated curved edges in right lobe of the liver.

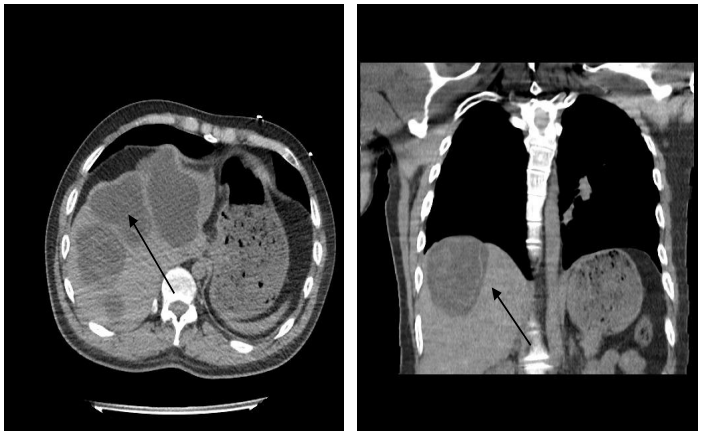

**Figure 2.** Simultaneous abdominal tomography demonstrates ruptured hydatic cyst in both axial and coronary views.

He was treated with epinephrine (0.3 mg IM) given 5 times approximately 10-15 minutes apart with excessive fluid treatment (4 liters in 1.5 hours). Dexamethasone 8 mg, antihistaminic and H2 receptor blockers were also given to the patient intravenously. His CBC than showed white blood cell count of 22,300/ uL, neutrophils as 12,500 / uL, monocytes as 6,000/ uL and basophils as 1,000/ uL. His liver enzymes were mildly elevated (aspartate aminotransferase 63 U/L and alanine aminotransferase 78 U/L). Emergent abdominal surgery after consultation confirmed and treated the pathology. He was hospitalized in ICU and in the surgery clinics for four and two days after surgery, respectively. He was discharged with full recovery.

## Discussion

Hydatic cyst is endemic in populations busy with animal husbandry where the environmental health and preventive medicine services are inadequate [1]. The most common pathogen is *Echinococcus granulosus.* It is seen frequently in rural areas especially uncontrolled slaughter does occur [1,2].

The pathogen lives in dogs and the intermediate hosts are often sheep and cattle. Human is affected by taking orally the ovum spread by dog feces. Embryos get into blood stream crossing the mucosa of intestines. They are transformed to cysts with single pouches when they enter to the liver via portal vein. Most of the embryos are held in sinusoids. For that reason hydatic cyst is seen mostly in the liver with a rate of about 70% [2,3].

Imaging procedures are essential in diagnosis and evaluation of the extent of liver hydatidosis; ultrasound (US) and computed tomography (CT), can depict hydatid cyst disease. US are used to most commonly testing of hepatic hydatid cysts lesions in the evaluation and typing [4]. CT scan was performed in patients preoperatively to clarify the relationship with primary organs. Hydatid cyst disease is classified into four types on the basis of their CT Features.

**Type I:** Water attenuation cyst

**Type II:** Type II A: Peripherally lined round lesions with fluid in the center; on CT, daughter cysts may show higher attenuation values. Type II B: High-density fluid surrounding the daughter cysts appears as radiating spokes in a rosette pattern. Type II C: High-attenuation round or oval masses with occasional cysts daughter cysts.

**Type III:** Peripheral calcification.

**Type IV:** Various features depending on site of rupture [5].

Anaphylaxis is the most severe and life threatening multi-systemic hypersensitivity reaction occurs immediately after exposure to allergen [6]. Cutaneous symptoms occur in 90% of

the cases and comprise of hives, angioedema, flushing and itching. In our patient, cutaneous symptoms were not prominent in our patient possibly do to the exposure occurred in the inner part of the body without direct contact to mucous membranes. Besides, patient's acknowledgement about what happened also aid physicians that we lack in this case. Thus, to put the diagnosis was complicated for us. The rates of respiratory, gastrointestinal and cardiovascular symptoms are 70%, 40% and 35%, respectively [7]. Our patient had severe dyspnea, wheezing, hypotension and collapse. We hypothesis that hydatic cyst rupture may have a higher probability of not having skin symptoms.

Rupture of hydatic cyst may cause a wide spectrum of allergic reactions between simple urticarial rash and severe anaphylactic shock [8]. Hofstetter et al. reported just one anaphylactic shock among 29 patients with hydatic cyst that they had operated in Spain [9]. In Turkey in a group of 32 hydatic cyst patients in the last five years, the only anaphylaxis case was a hydatic cyst of the lung occurred during thoracotomy [10]. Our case differs from them as anaphylaxis developed with spontaneous rupture of the cyst without no known trauma.

## Conclusion

In conclusion, when patients with severe shock signs admit EDs in areas where animal husbandry is common, anaphylaxis due to hydatic cyst rupture should be kept in mind. Bedside abdominal ultrasonography can give clues about cysts in the liver. If so, computerized tomography can give definitive diagnosis. Emergent surgery can be lifesaving.

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