

# A Case of Pulmonary Hydatid Cyst with Respiratory Arrest as a Result of Spontaneous Rupture in Cyst

## Spontan Kist Rüptürü Nedeni ile Solunum Arresti Gelişen Akciğer Hidatik Kist Olgusu

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### Abstract

Echinococcosis or hydatid cyst disease is caused by larvae of Echinococcus. Pulmonary hydatid cysts are usually asymptomatic but patients may occasionally develop symptoms due to expectoration of cyst contents or compression of the surrounding structures. In this case report, a patient hospitalized and treated with a misdiagnosis of pneumonia and determined that to have a spontaneous hydatid cyst rupture after the development of respiratory arrest is reported. We aimed to emphasize the importance of cyst hydatid disease in the differential diagnosis of pneumonia, particularly when patients reside in endemic areas.

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**Key words:** Cyst hydatid, pneumonia, respiratory arrest, childhood

### Özet

Ekinokokkozis veya hidatik kist Ekinokokun lavraları ile gelişen bir hastalıktır. Pulmoner hidatik kist genellikle semptomsuzdur fakat bazen hastalarda kistin içeriğinin boşalması ve ya çevre dokulara bası yapması sonucu semptomlar gelişebilmektedir. Bu yazıda, Pnömoni yanlış tanısı ile hastaneye yatırılarak tedavi edilmiş ve solunum arresti oluştuktan sonra spontan kist rüptürü olduğu saptanmış bir olgu sunulmuştur. Özellikle endemik bölgelerde hidatik kist hastalığı ile pnömoni ayırıcı tanısının iyi yapılmasının önemini vurgulamak istedik.

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**Anahtar kelimeler:** Kist hidatik, pnömoni, solunum arresti, çocukluk çağı

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## Introduction

Hydatid cyst disease, or echinococcosis, is a zoonosis which is generated by the larval forms of the cestodes belonging to the echinococcus genus. Depending on the location of the cyst, it can be asymptomatic, or it can also cause fatal results. Most symptoms of pulmonary cystic echinococcosis are caused by mass effect of cyst volume, which exerts pressure on the surrounding tissues. The principal complication is cyst rupture. The spontaneous rupture of the cyst localized the lung and the development of respiratory arrest is very rare.

In this article, a case hospitalized and treated with a misdiagnosis of pneumonia and determined to have spontaneous hydatid cyst rupture after the development of respiratory arrest is reported. We describe an acute occurrence of cardiopulmonary arrest due to spontaneous rupture of lung hydatid cyst in a child infected with echinococcus.

## Case Report

A seven year-old female patient was admitted to our pediatric emergency department with complaints of cough and fever. Her complaints

had started one month earlier, and she had been treated for pneumonia at the hospital for seven days. On her physical examination; she had a temperature of 37.5°C, pulse 80/min, respiratory rate 30/min, and blood pressure 100/65 mmHg. Body weight was 23 kg (50-75%), height was 123 cm (50-75%). She was weak in appearance. On her chest examination, breath sounds were decreased in the lower right lung lobe and she had diffuse bilateral crepitant rales. Cardiovascular, neurological, and abdominal examinations were normal. The laboratory tests revealed that the white cell count was 21.400/mm<sup>3</sup>, hemoglobin was 9.5 g/dL, hematocrit was 30.7%, MCV was 79 fl, platelet was 767.000/mm<sup>3</sup>, and CRP was 152 mg/L (<5 mg/L). Her blood biochemistry was normal. It was seen that there was a homogeneous radio opaque image in the right lung base at the first chest radiography (Figure 1).

Benzatin-penicilline G and clarithromycine was begun empirically. One day later after hospitalization, she developed sudden cardiopulmonary arrest. Cardiopulmonary resuscitation was performed and the patient was immediately intubated. The structures which were thought to belong to the cyst were determined in the endotracheal aspiration. The case was observed by using mechanical ventilation. Albendazol 10 mg/kg/day was added per 12 hours. She was extubated after being observed by mechanical ventilation for 17 hours. As a result of indirect hemagglutination test (IHA), it was detected positive at 1/2560 titres. The second chest radiography and thorax CT showed that there were two 5 cm sized cysts with an air fluid level in the right lung (Figure 2).

The pathological analysis of aspirated materials during the intubation was reported as *Echinococcus granulosus*. Cranial computed tomography and echocardiography were normal. Abdominal USG scan revealed a calcified lesion with a 37 mm in diameter in the right lobe of the liver. The patient sent for consultation to the pediatric surgery department. Cystectomy and debridement were performed in the right lung. Albendazol were prescribed in a dosage of 10 mg/kg/day per 12 hours for 3 months postoperatively. Currently, at 7 months after operation, the child is well.

## Discussion

Echinococcosis is a zoonotic disease common all over the world. It is seen in people who are engaged in farming. Turkey is an endemic area. The incidence rate per year is 4.9/100.000 (1, 2). Our case lived in a rural area and had a history of contact with dogs.

The symptoms and findings change depending on the location of the cyst. Most of the cases that have a diagnosis of hydatid cyst of the lung are coincidentally detected at the routine X-ray screening of lung. Arround et al. (3)



**Figure 1.** Homogeneous radio opaque images in the right lung base



**Figure 2.** Five cm sized two cysts with air fluid level and ruptured cyst in the right lung

evaluated 118 patients with lung hydatid cyst. Giant cysts ( $\geq 10$  cm in diameter) were detected in 32 patients. They detected that all of them were symptomatic; on the other hand, they determined that only 18% of the patients whose cysts were <10 cm in diameter were symptomatic. They reported that the most frequent symptom was cough (83%), followed by chest pain (37%), hemoptysis (26%), and fever (15%) (3). Çakır et al. (4) evaluated 41 patients and the most common presentation of these patients were cough (36%), abdominal pain (29%) and rash (17%). Cough and fever were our patient's complaints on applying to our clinic.

The cysts are the most frequently seen in the liver and lung. Even if they are rare, cysts in heart, spleen, orbita, retrovesical, cerebral, and bones were also determined (1, 5, 6). Dogan et al. (7) determined the coincidence of liver cyst with lung cyst in patients to be less than 10%. In various studies, this rate is reported between 7-18 % (8). A calcified lesion was detected in our patient's liver by abdominal ultrasound. We thought that this lesion may be a sequel of a ruptured hydatid cyst. Cranial CT scan and the echocardiography were normal.

Rupture of a cyst (spontaneously or by trauma) and empyema, pleural effusion, hemoptysis, anaphylaxis, urticaria, dyspnea and pneumothorax secondary to the rupture are among the complications that can appear (9-11). Non-complicated cysts in the chest x-ray have strict borders with an oval or spheroid shape. If the cysts are perforated, in lung graphy, some different findings can be encountered such as the image of lotus, meniscus sign, and air-fluid level (1, 7). There was no cystic image in our patient's lung X-ray when the patient applied to our clinic. After perforation, a lotus image was seen; at the same time, two non-perforated cysts having smooth borders were also encountered. Thorax CT is a helpful method in terms of the operation process by giving information about the location and the border of the cyst (1). Thorax CT was also a guide for us before the operation in our case.

The diagnosis is supported by the detection of antibody and antigen in the serum. Indirect hemagglutination test (IHA) and ELISA (enzyme-linked immunosorbant assay) are used widely for diagnosing echinococcosis. IHA test is an easily-available test, although its seropositivity is about 50% in cases having lung cysts. On the other hand, 90% seropositivity is ascertained in cases having liver cysts. False positivity differs generally in other parasitic diseases, while false negativity differs depending on location of the cyst and condition of perforation (1). IHA test result was reported as 1/2560 titres in our patient. The results of the test was reported as positive at 1/550 titres one month after the operation.

Medical therapy has been performed with benzimidazole derivative drugs. Mebendazole and albendazole are two drugs used in this group. Albendazole is reported as the primary choice drug for medical treatment because it has fewer side effects than mebendazole (1, 12, 13). Albendazole treatment was begun twice a day in a dosage of 10mg/kg/day. At the end of the third month, no side effects were observed regarding the medical therapy.

Surgery is preferred in lung cyst hydatid cases as it gives definitive results. Lobectomy, wedge resection, pericystectomy, intact cystectomy, and capytonage are other methods that can be preferred. As a result of the

surgical operations applied to lung cysts, some complications like empyema, atelectasis, pneumonia, hemorrhage, and spreading of cyst content can occur (1). Our patient had cystectomy and debridement by pediatric surgeons. During and after the operation, no complications were observed. As a consequence of the occurrence of complication during the surgical therapy, the cyst material may spread and this situation increases the possibility of relapse (9). No sign of relapse was encountered during the follow-up of our patient for 3 months.

In our country, an endemic area, echinococcosis is a serious public health issue. Cysts may settle down randomly in the organs of the human body. Echinococcus causes findings and symptoms which are specific to organs in which they are located. Lung cysts can imitate pneumonia and diagnosis may be delayed. Hydatid cyst disease should be kept in mind during the differential diagnosis of nonresponsive pneumonia.

#### Conflict of Interest

No conflict of interest is declared by the authors.

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