

## Case Report

# Giant Pulmonary Hydatid Cyst of the Middle Lobe of the Right Lung in a 13-Year-Old Girl: A Case Report

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## Abstract

**Introduction:** Rupture of pulmonary hydatid cyst is an important clinical problem in native areas of Echinococcal infection. Cyst rupture is not uncommon, but it is one of the most frightening complications.

**Case presentation:** We report a 13-year-old girl who had a giant cyst in the middle lobe of her right lung. The cyst was removed and treated with albendazole. One-year follow-up was asymptomatic.

**Conclusion:** Right middle lobe involvement is very rare in children, but is more likely to rupture.

**Keywords:** Echinococcus granulosus; Children; Rupture; Cystectomy; Capitonnage

## Introduction

Hydatid cyst is considered a health problem in most parts of the world, especially in areas with traditional livestock due to the lack of a proper program to prevent its transmission [1]. The disease is particularly endemic in the Mediterranean, the Middle East, and South Africa, and several countries such as Turkey, Iran, and South Africa [2]. Hydatid cysts can be found in almost all organs and tissues of the human body, but the most involved organs are the liver (50% to 77%), lungs (15% to 47%), spleen (0.5% to 8%), and kidneys (2% to 4%) [3,4]. The clinical manifestations of this disease depend on its size, location, and relationship to other body structures, but are often asymptomatic and may present with complications such as rupture, infection, anaphylactic shock, or compression [5]. Pulmonary cysts are the most common type of cyst in children [6,7]. In this article, we report a giant hydatid cyst in the middle lobe of the right lung in a child who has undergone surgery.

## Case Presentation

The patient was a 13-year-old Iranian girl who was admitted to the emergency room with symptoms of fever, leukocytosis, vomiting, chronic cough, dyspnea, discharge, and hemoptysis. The patient cannot breathe effectively and comfortably due to severe dyspnea in the supine position. No previous medical problem was associated with weight loss and anorexia. The patient underwent radiography and tomography. CT showed a large hydatid cyst in the

right middle lobe 17 cm in diameter and ruptured (Figure 1). The patient underwent bronchoscopy, thoracotomy, and closure of open bronchus and removal of the remaining cavity with capitulation, and without lung lobectomy, the cyst was removed (Figure 2). Ten days after surgery, the patient was discharged in good general condition on the recommendation of albendazole for 3 months. One-year follow-up with CT showed no cyst.



Figure 1: CT scan with involvement of the middle lobe of the right lung.

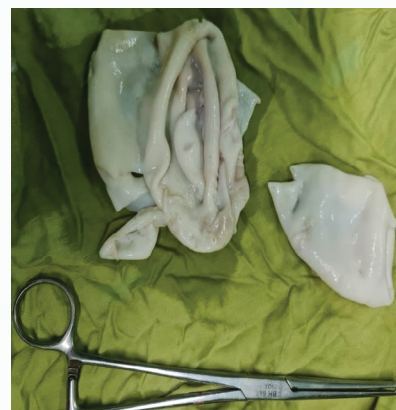


Figure 2: Ruptured specimen of hydatid cyst of lung.

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## Discussion

Hydatid cyst is a common disease between humans and animals that is mostly caused by tapeworms of *E. granulosus* in the larval stage [7]. This disease is native to Iran and accounts for 1.0% of all surgical admissions [8]. Hydatid cysts usually grow slowly and are diagnosed in only 10% to 20% of patients fewer than 16 years of age. Most adult seven with childhood infections were asymptomatic for a long time [9] and were later diagnosed randomly on chest radiographs [4]. Its clinical symptoms generally depend on its location, size, and relationship to nearby organs [5]. With lung infection, manifestations such as cough, dyspnea, fever, nausea, vomiting, and chest deformities appear [7]. The initial diagnosis of this disease is through imaging. However, serological tests such as Immunoglobulin G (IgG ELISA) related immunosorbent assay can be used to confirm the diagnosis [7,10]. However, diagnostic radiographic imaging methods are still more valid than serological tests [5]. Hydatid cyst rupture is the most common and major complication that occurs in 49% of cases. This rupture may be associated with (separation of the pericardium from the endocyst), communication (with the bronchus), and direct rupture (rupture of all membranes with the shedding of contents) [11]. Clinical and radiological signs of pulmonary cyst rupture include severe chest pain, anaphylactic reaction, chronic cough, severe dyspnea, hemoptysis, cyanosis, shock, and asphyxia with acute onset [2,5]. Radiological signs include Cumbo sign, Whirl sign, Waterlily sign, Dry cyst sign, Mass within a cavity sign [4,11]. In the study of Cevik et al. [12], the most obvious sign of pulmonary cyst rupture in children is Waterlily sign, which was Compatible with the person we studied (Figure 3). Large pediatric studies have reported a cyst rupture rate of 34% to 47% [4,12]. Also, the rate of complications and postoperative mortality of ruptured cysts is higher than complete cysts [13,14]. This rupture usually occurs during surgery or trauma, but factors such as young age, large size, increased pressure, site of injury, and trauma also susceptible the cyst to rupture [5,15]. Cysts are more common on the right side of the lung and in the lower lobes [16], although some studies have reported less than 5% involvement of the right middle lobe in children [4,7]. But the remarkable point is the high rate of cyst rupture in this place compared to other places [4,13]. The middle lobe may be exposed to more pressure due to the expansion of the upper and lower lobes as well as the heart rate. Therefore, the increase in cyst rupture in this lobe can be explained as follows. Also in children, due to the high elasticity of the lung parenchyma, the cysts may spread to large diameters [17]. This is also an important factor for cyst rupture in children [5]. The most effective treatment for hydatid cyst is radical surgery and the use of 0.5% sterimide solutions, 15% hypertonic saline, 1% silver nitrate solution, and sodium hypochlorite. These solutions can reduce the

risk of anaphylactic reactions by destroying daughter cysts [18]. Also, drug treatment with albendazole for a certain period after surgery is necessary to prevent recurrence [2].

## Conclusion

Hydatidosis is a native disease with serious health risks in developing countries. Middle right lung involvement is less common in children, but is more likely to rupture. However, cyst rupture is a particular risk in all age groups. But in this age group, due to the rapid growth of pulmonary cysts and the increased risk of cyst rupture, they need immediate actions and intensive care.

## Author Statement

Dr. Alireza Malekzadegan has designed the concept of the study, literature review, Data Collection, and analysis. MSc. Afsaneh Poudineh has contributed to study concept design and manuscript writing. Dr. Alireza Malekzadegan: patient treatment.

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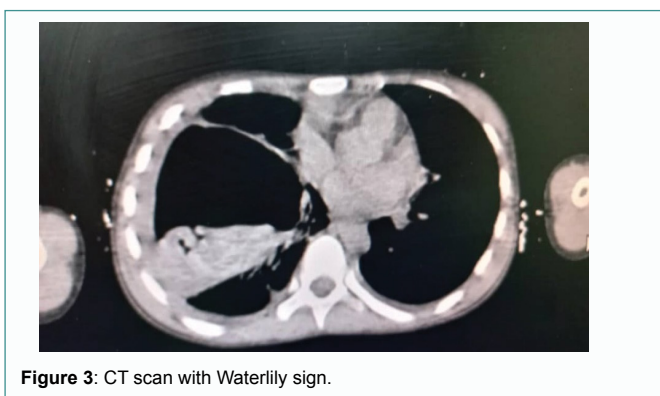


Figure 3: CT scan with Waterlily sign.

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