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**Case Report**

**Unusual location of the hydatid cyst: Coexistence of serratus anterior muscle and lung**

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## ABSTRACT

Hydatid cyst, although seen less each year, is still a serious public health problem in countries, such as Turkey that especially livestock is an important source of income and that not taken adequate measures concerning the protection of the disease. We present a rare hydatid cyst case, which occurred concurrently on the lung and serratus anterior muscle. In our case, the cyst was firstly thought as a mass. When the germinative membrane was expectorated to the bronchus, the hydatid cyst was diagnosed with fiberoptic bronchoscopy (FOB).

**KEYWORDS:** Hydatid cyst, serratus anterior, germinative membrane, lung

## INTRODUCTION

Hydatid cyst, although seen less each year, is still a serious public health problem in countries, such as Turkey that especially livestock is an important source of income and that not taken adequate measures concerning the protection of the disease.<sup>[1]</sup> Hippocrates (460-377 BC), reported the presence of hydatid cysts in cattle and swine and defined the hydatid cyst that he found in the human liver as a 'pouch filled with water (Jecur aqua repletum).<sup>[2]</sup> It can settle into almost any organ/tissue in the body. The most common settling organs are liver, and then the lungs.<sup>[1]</sup> Hydatid cysts located in muscle or soft tissue constitute 1-5% of all echinococcal infections in endemic areas.<sup>[3]</sup> We present a rare hydatid cyst case, which occurred concurrently on the lung and serratus anterior muscle. In our case, the cyst was firstly thought as a mass. When the germinative membrane was expectorated to the bronchus, the hydatid cyst was diagnosed with fiberoptic bronchoscopy (FOB).

## CASE REPORT

A 23-year old male patient applied to the polyclinic with complain left chest pain approximately 8 months ago and chest X-ray applied, and oval appearance lesion was detected in the left hilar region (Figure 1). Then computerized thoracic tomography (CT) was performed, and a mass lesion with a size of 35x55 mm, located in the paramediastinal region of the left upper lobe (Figure 2), and a mass lesion adjacent to the serratus anterior muscle was seen (Figure 3). In the history of the patient, the lesion in the lung was evaluated in a solid lesion, computed tomography-guided tru-cut needle biopsy was performed and histopathological diagnosis was reported as a chronic inflammation in another health center. Approximately 8 months after the transthoracic biopsy procedure, the patient was admitted to the chest diseases outpatient clinic with dyspnea and FOB performed. During the FOB procedure, the dirty white material seen in the left upper lobe entrance was removed with forceps (Figure 4). Pathological examination revealed a germinative membrane and *Echinococcus granulosus* infection. The indirect hemagglutination test was negative in the patient. The patient, who had complaints of hemoptysis and had pneumonia after FOB, was hospitalized in the thoracic surgery clinic and treated with antibiotics and albendazole for about

2 weeks. Abdominal ultrasonography was performed and there was no pathology in the liver. Then the patient was operated and left posterolateral thoracotomy was performed. First, the lesion in the serratus anterior muscle was excised (Figure 5). When the lesion was opened with a scalpel, it was seen that there was a germinative membrane and a purulent fluid in the membrane (Figure 6). Then, cystotomy was performed by entering the thorax and the non-expectorated part of the germinative membrane was removed, bronchial air leak was sutured, and capitonnage was performed. The diagnosis of both lesions was confirmed histopathologically as hydatid cyst. The patient was discharged on the postoperative fifth day.

## DISCUSSION

Hydatid cyst disease is common in the whole world. Due to the lack of appropriate data in many countries, the assessment of the current situation cannot be fully performed. High parasitic prevalence is reported in Eurasia (eg Mediterranean countries, Russian Federation and Turkic Republics), Africa (North and Eastern regions), Australia and South America. <sup>[4,5]</sup> Roughly 60% of the patients, hydatid cyst settles in the liver and in 30% of the patients, it settles in the lungs; and it is usually solitary in the lungs. <sup>[6,7]</sup> Parasites that cannot hold on to both organs can rarely settle into other parts of the body with systemic circulation. <sup>[8]</sup> The coexistence of the hydatid cyst of the serratus anterior muscle and the hydatid cyst of the lung is even more rare.

Symptoms and findings in patients vary according to the location and size of the cyst. The most common symptoms in the literature are; cough (53-62%), chest pain (49-91%), dyspnea (10-70%) and hemoptysis (12-21%). Less frequent weakness, nausea and vomiting can be seen. <sup>[6,7]</sup> If the cyst is located in the soft tissue or muscle, it may be seen as swelling in the settled area. In our patient, the first symptom is chest pain. The application complaint after transthoracic biopsy is shortness of breath. His complaint after FOB is hemoptysis.

The most diagnostic symptom is expectoration of cyst fluid or membranes. This means that the cyst is perforated and opened to the bronchus. After perforation, the general condition of the patient may be impaired and chest pain may develop with shortness of breath. Acute hypersensitivity reactions, including fever and anaphylaxis, are the most prominent findings of ruptured cyst. Very rarely, there may be deaths due to anaphylaxis. <sup>[6,9]</sup> Since it is a disease that mimics many diseases, bronchoscopy can be performed in cases required for differential diagnosis. Endobronchial white-yellow bright cyst membrane can be seen in bronchoscopy. Considering that it may cause cyst rupture, it is not routinely recommended in the diagnosis of hydatid cyst. However, in the presence of suspicion in the diagnosis of hydatid cyst clinically and radiologically, and especially if there is suspicion of malignancy it should be done. <sup>[10,11]</sup> In our patient too, approximately 8 months after transthoracic biopsy, as a result of the cyst perforated and opened into the bronch, the diagnose made by membrane expectoration and removal of the membrane by FOB. The membrane had been seen by the excision of the mass in the serratus anterior muscle and it was histopathologically confirmed.

Although the surgery to be performed in ruptured cysts may seem to be the same in technical terms, it will be necessary to consider some issues to be considered. The management of ruptured hydatid cyst in the acute stage should mainly be directed to major complications resulting from the discharge of cyst content towards the pleural cavity or tracheobronchial tree. After the acute period, conservative treatment should be performed to provide as much lung tissue as possible. After the infected cyst is opened and the contents are evacuated, the cavity must be thoroughly cleaned. In the presence of severe pericystic inflammation and severe pneumonia, lobectomy may have to be preferred, even if it is not desired at all.<sup>[12]</sup> In our patient, pneumonia and hemoptysis were treated as a result of cyst perforation and membrane expectoration. Then, by performing a thoracotomy, both the cyst was excised in the serratus anterior muscle and the infected cyst in the lung was opened and the contents were evacuated. Lastly capitonnage was performed.

## CONCLUSION

Physicians working in endemic areas should consider the hydatid cyst in the neoplasm evaluation processes and determine their approach methods accordingly.

## ACKNOWLEDGMENTS

**Conflict of Interest:** No conflict of interest was declared by the authors.

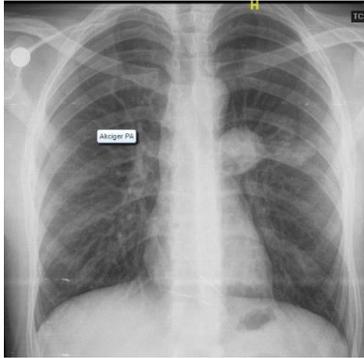
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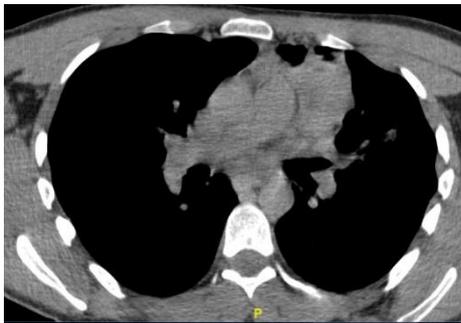
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**Figure 1:** Thorax graphy of the patient



**Figure 2:** Paramediastinal lesion in the left lung upper lobe on CT.



**Figure 3:** CT image of the lesion located in the serratus anterior muscle



**Figure 4:** The membrane at the left upper lobe entrance on the FOB and the image in the solution of the membran.



**Figure 5:** Operation image of the lesion in the serratus anterior muscle



**Figure 6:** Excised specimen from the serratus anterior muscle