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An 81 Year-Old Woman with Hydatid Cyst-Related Pulmonary Embolism

Seksen Bir Yaşında Kist Hidatik İlişkili Pulmoner Embolisi Olan Kadın Olgu

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Abstract

Hydatid cyst related-pulmonary embolism is an uncommon condition. We admitted an 81-year-old woman to our hospital with chest pain. A multidetector computed tomography of the chest showed an oval, cystic filling defect, containing daughter cysts, causing vessel enlargement within the right main pulmonary artery and its lobar and segmental branches. Three giant hydatid cyst lesions in the right lobe of the liver adjacent to the inferior vena cava with daughter cysts were detected using the abdominal ultrasonography. Hydatid cyst-related pulmonary embolism should be considered in the differential diagnosis in patients who have chest pain and hepatic hydatidosis.

Key words: *Pulmonary embolisms, Cyst, hydatid, Tomography, multidetector computed.*

Özet

Kist hidatikle ilişkili pulmoner emboli nadir görülen bir hastalıktır. Seksen bir yaşında kadın hasta göğüs ağrısı ile hastaneye başvurdu. Multidetektör bilgisayarlı tomografide lober ve segmenter dalları ile birlikte sağ ana pulmoner arterde damar genişlemesine neden olan kız vesiküller içeren oval şekilde kistik dolum defekti saptandı. Abdominal ultrasonografide karaciğer sağ lobunda vena cava inferiora komşu kız veziküller içeren dev tip üç hidatik kist olduğu gözlendi. Kist hidatiğin yaygın olduğu ülkelerde göğüs ağrısı ile başvuran hastada hepatik hidatik kist de saptanmışsa, kist hidatik ilişkili pulmoner emboli mutlaka ayırıcı tanıda akla getirilmelidir.

Anahtar Sözcükler: *Pulmoner emboli, kist hidatik, multidetektör bilgisayarlı tomografi.*

Hydatid disease is still a major worldwide health problem. Worldwide travel has made hydatid liver disease much more prevalent in previously unaffected regions, such as Northern Europe or North America, although it is more dominant in sheep-raising countries. Echinococcosis is caused by the larval forms of *Echinococcus granulosus*, which requires two mammalian hosts to complete its life cycle. The definitive hosts are primarily canines in which the adult tapeworms inhabit the small intestines and excrete tapeworm eggs that contaminate food, vegetables, or water. Humans serve as accidental hosts suffering the echinococcosis through the ingestion of contaminated substances (1).

The hydatid cyst of *Echinococcus granulosus* affects mostly the liver and lungs, although it can involve any organ in the body (2). Hydatid pulmonary embolism is a life-threatening condition which usually results from cardiac hydatidosis, but inferior vena cava (IVC) or hepatic vein infusion in liver hydatidosis can also be the reason (2). Herein, we present multi-detector computed tomography of the chest (MDCT) and ultrasonography (US) findings of a case of echinococcal embolization to the pulmonary artery.

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CASE

An 81-year-old woman was admitted to our hospital with chest pain. She suffered from the chest pain reflected to her back with a sudden-onset two weeks ago. Coronary angiography was performed for suspected myocardial infarction in another hospital. As it yielded normal findings, the patient was referred to our center. Her medical history revealed previous surgery for hepatic cystic echinococcosis 17 years ago.

Physical examination revealed no abnormalities. Laboratory findings were also normal. A chest X-ray revealed right hilar enlargement. A MDCT showed an oval, cystic filling defect, measuring about 33 mm in width, containing daughter cysts, causing vessel enlargement within the right main pulmonary artery, and its lobar and segmental branches (Figure 1). There were no hydatid cyst lesions within the lung parenchyma. Three giant hydatid cyst lesions in the right lobe of the liver adjacent to inferior vena cava measuring 149X94x100 mm with daughter cysts were detected using the abdominal US. Computed tomography (CT) showed the typical peripheral location of the daughter vesicles within the mother cyst (Figure 2). On ultrasonographic images, we revealed that the border between the wall of the hydatid cyst and IVC was missing (Figure 3). No cardiac cyst or dilatation of the right ventricle was visible by transthoracic echocardiography. The pulmonary artery pressure was measured as 40 mm/Hg. The patient was found to be seropositive for anti-echinococcal antibodies, as assessed by enzyme-linked immunosorbent assay. Based on the clinical and laboratory findings and the patient's medical history, a cyst-related pulmonary embolism was suspected.

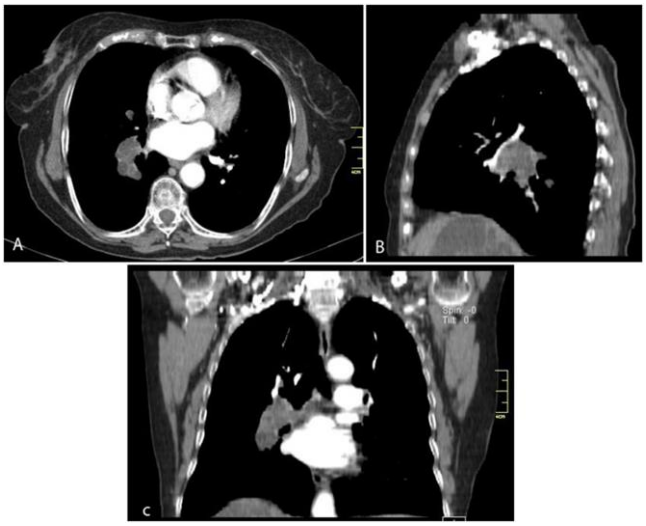

Figure 1a, b, c: *Axial **(A)** sagittal **(B)** and coronal **(C)** multiplanar reformatted CT of the chest images showing a multiple cystic lesion within the right main and lower lob pulmonary artery*

However, the patient refused surgical intervention for the hydatid cyst lesion in the liver. As the patient had a high risk for an anaphylactic reaction, pulmonary embolectomy was not considered as a therapeutic option. For these reason, a course of oral albendazole (400 mg bid) was initiated.

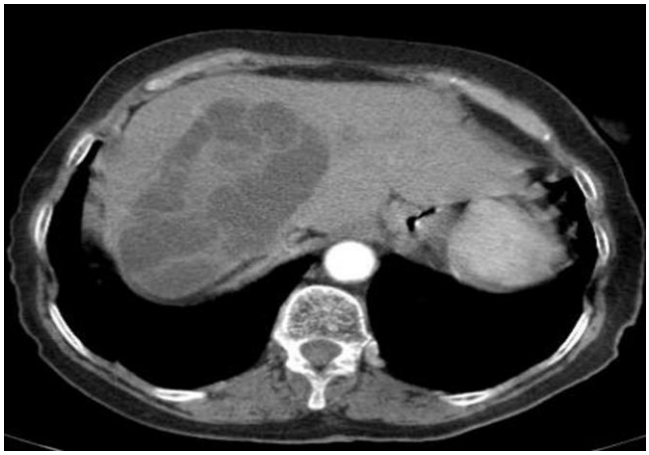

Figure 2: *CT scan showing the typical peripheral location of the daughter vesicles within the mother cyst*

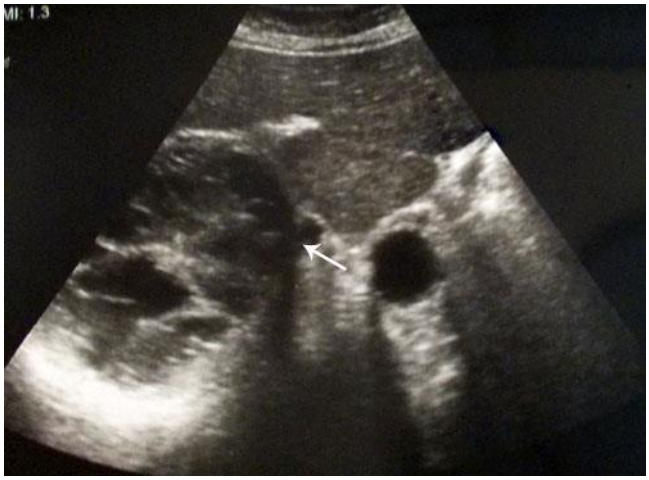

Figure 3: *Abdominal US examination showing a missing border between the wall of the hydatid cyst and IVC*

DISCUSSION

Hydatid cysts are one of the major health concerns in underdeveloped and developing countries. They are seen mostly among sheep breeders (3). Ingestion of contaminated food and water is the source of this parasitic infection which affects humans secondarily. Cysts affect mostly the liver and lungs, but can also occur in any organ in the body (4). Hydatid cyst related-pulmonary embolism is an uncommon condition which usually results from cardiac hydatid disease (5,6). However, the invasion of the cardiovascular system components other than the heart may be also the cause of this disease. Embolization following the cyst ruptures into the IVC or hepatic veins based

mainly on postmortem examinations have been already reported (3,7-9). Akgun et al. (10) reported a case with hydatid cyst related-pulmonary embolism caused by the rupture of the cyst into the IVC. In our case, there was also chronic embolism of the pulmonary arteries due to the cyst rupture into the IVC. Although hemoptysis is the most frequent symptom, clinical findings of the hydatid cyst-related pulmonary embolism are often non-specific. (11). Chest pain, dyspnea, cough or an anaphylactoid reaction can be also seen (7). Three types of clinical outcomes from pulmonary hydatid embolism have been described in the literature: (a) acute fatal embolism, (b) subacute embolism resulting in pulmonary hypertension and death in a year, (c) chronic pulmonary hypertension (3). Therefore, we suggested chronic hydatid pulmonary embolism.

Clinical and radiological findings are useful to diagnose the hydatid pulmonary embolism. Intraluminal defects, such as pulmonary thromboembolism and primary arterial tumors should be considered in the differential diagnosis (12). Possibly, the most useful imaging technique in the investigation of an echinococcus-related pulmonary embolism is CT-based pulmonary angiography, which may not only reveal the embolism, but also indicate its parasitic cause (from the cystic appearance of the filling defect) and reveal other cysts (13). Clinical and radiological findings are used to exclude the acute thromboembolic diseases. In our case, cystic appearance of the filling defect of the pulmonary artery that determined by MDCT was useful for excluding pulmonary thromboembolism. Intra-arterial hypodense lesions did not also show any contrast enhancement. This finding excluded primary arterial tumors showing contrast enhancement. In our case, the origin of the pulmonary hydatid emboli was shown by the abdominal US. On the sonographic images, we revealed that the border between the wall of the hydatid cyst and IVC was missing.

Hydatid cyst-related pulmonary embolism is treated with surgical intervention, such as embolectomy and enucleation. Rupture of the cyst or the artery, anaphylactic shock, or pseudoaneurysm formation is the main complications of the surgical removal of the intra-arterial hydatidosis. It can be also treated with benzimidazole (albendazle, mebendazole) in addition to surgery (14). As surgery was considered very risky for our case, the patient was only given oral albendazole.

In conclusion, early diagnosis and early treatment of the hydatid cyst-related pulmonary embolism is of utmost importance to prevent life-threatening recurrent embolism. Therefore, pulmonary hydatid embolism should be always considered in the differential diagnosis of the cystic filling defects of the pulmonary artery in patients with hepatic hydatid cyst adjacent to the IVC.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - T T.K., Hü.L., Ha.L.; Planning and Design - T.K., Hü.L., Ha.L.; Supervision - T.K., Hü.L., Ha.L.; Funding -; Materials - Ha.L.; Data Collection and/or Processing - T.K., Hü.L.; Analysis and/or Interpretation - T.K., Hü.L.; Literature Review - T.K., Hü.L.; Writing - T.K., Hü.L.; Critical Review - T.K., Hü.L.

YAZAR KATKILARI

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