Heart and Lung Hydatid Cyst in a Pregnant Woman: A Case Report

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Abstract
We reported a 23-year-old female, 2 months pregnant presented with cough and blood streaked sputum (Hemoptysis) since two weeks ago. Chest CT scan showed simultaneous multiple cystic lesions in the lungs and heart. After therapeutic abortion, the patient was operated via median sternotomy incision and all hydatid cysts were extracted of the lung and heart. The patient was discharged after one week with good condition. The abdominal and pelvic sonography of the patient was also normal with no cystic lesions. No endo-bronchial lesions or malignant cells were reported in bronchoscopy.

Keywords: Echinococcus granulosus; Lung; Cyst; Heart

Introduction
Hydatid cyst is a common parasitic disease between humans and animals (zoonosis) considered as an endemic disease in many regions of the world including South America, Africa, Greece, Turkey, some areas around the Mediterranean Sea, the Middle East, India, China, Australia, New Zealand, and Iran. This cyst is caused by a parasite called Echinococcus granulosus which matures in the intestine of dogs (main host) or other canines such as wolves, foxes, etc. The rate of hydatid cyst development in lungs is three times as much as hydatid cyst in liver. Pulmonary hydatid cysts usually have no symptoms except for the cases when they grow really large and cause coughs or hemoptysis. The side effects of pulmonary hydatid cyst emerge only when it ruptures inside bronchial tree or Pleura. The most common symptoms of cardiac hydatid cyst are dyspnea, angina and heart beat caused by the pressure put on the coronary artery and cardiac conduction system by the cyst.

The clinical image of cardiac Echinococcus depends on the site and intensity of the disruption of surrounding structures. Cardiac hydatidosis may represent itself through a non-specific face such as weight loss, fever, dizziness, lethargy and heartbeat. It is possible for the patient with cardiac hydatid cyst to have no symptoms at all (10%). Following the hydatid cyst rupture of the right hand side of the heart, the progressive pulmonary hypertension takes place immediately. This is due to the embolization of a large number of Scolexes inside the pulmonary blood circulation.

Trans-esophageal echocardiography (TEE) is an elective diagonal procedure for cardiovascular hydatid cyst. Cardiac or pulmonary hydatid cyst is mostly treated through operation. This operation seeks to eradicate the parasite, prevent cyst rupture, prevent diffusion of its content during the operation, destroy cyst’s remaining cavity and maintain pulmonary parenchyma.

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and assuring. One of these useful solutions is 20% hypertonic normal saline.\[11\] The elective incision in operating the bilateral lung hydatid cyst or simultaneous heart and lung cyst is transternal incision (clamshell incision) or median sternotomy.\[5\] Serological monitoring, echocardiography, chest radiography, and, if necessary, chest CT scan during the 5 years following the operation in patients with both heart and lung cysts are recommended to trace the patients.\[12\] The aim of case report was to evaluate of heart and lung hydatid cyst in a pregnant woman.

**Case Presentation**

A 23-year-old woman presented from the countryside to doctor 2 weeks after pregnancy complaining about chest pain and severe coughs with hemoptysis. The patient was also complaining about weight loss (7 kg) and nocturnal sweating during this period. The patient claims to have experienced similar symptoms 3 months ago, but an outpatient treatment improved his health. The initial examinations found the patient to be anemic with normal sounds in lungs. As for the hearing of heart, murmur II/VI is heard in heart apex and the left side of sternum. The examination of the abdomen and organs was normal. Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

**Laboratory tests**

Sputum smear of the patient in terms of acid-fast bacilli (AFB) conducted three times was negative.

**Chest cage radiography**

The picture of a density is observed in the upper zone of the right lung [Figure 1]. Opacity with blurred limits is seen in the left paracardiac which has not blurred the left side of the heart [Figure 1].

The image of a hypodense mass with a dimension of 2.5 × 3.2 cm in the posterior segment of the upper lobe of the right lung is observed [Figure 2]. A similar density with a size of 0.8 × 1 cm is seen in the Basal segment of the lower lobe of the right lung [Figure 2]. The image of a nodule with the size of 0.8 × 1.5 cm is observed in the left paracardiac, while an image of 2 other hypodense masses in pericardium and another hypodense mass with the size of 4 × 3 cm is observed in left ventricular myocardium [Figure 3].

The results of chest HRCT reported a 3.5 cm mass in the posterior segment of the upper lobe of the right lung and 25 and 12 mm nodules in the medial segment of the middle lobe of the right lung and the lingular lobe of the left lobe beside a 4 cm cystic mass in the right ventricular [Figure 4].

**Echocardiography**

A 37 × 36 mm hypoechoic lesion is observed in the apical septum of the heart with more tendencies to the right side which seems to be a mere number.

The abdominal and pelvic sonography of the patient was also normal with no cystic lesions.

No endo-bronchial lesions or malignant cells were reported in bronchoscopy and BAL.

**Discussion**

The patient, initially diagnosed with cold, underwent an outpatient treatment with symptoms of cough and vague chest cage pains. As other symptoms such as dyspnea and traces of blood were observed in her sputum, chest radiography was prescribed. As the patient was pregnant, preparing the
radiography was delayed and this issue delayed the diagnosis and treatment of patient. In any patient suspicious of hydatid cyst, liver and lung examination in terms of affliction with this disease is of particular importance.

On the other hand, the patient has lost 7 kilograms over the last months following one week of cold-like symptoms. As various papers indicate, patients with heart hydatid cyst may also experience weight loss. The other point is that observation of several opacities with flat sides in chest radiography suggest hydatid cyst for the patient confirmed by CT scan of patient’s chest. Several hydatid cysts of the heart and the upper and lower lobes of the lung are observed in chest radiography and CT scan. An important diagonal point in the patient is transformation of left side of the heart in the chest which may be used as interesting and guiding principles in simultaneous diagnosis of heart and lung hydatid cyst in the patient.

However, heart hydatid cyst is usually concealed due to the high density of the heart. In some cases, the site or large size of the cyst may alter the heart meter. Such cases particularly in endemic regions will result in diagonal suspicion. The other point to be remembered is that the artifact caused by heart movement is a major setback of CT scan in assessing cardiac hydatid cyst. Perhaps one of the most important tools of complementary diagnosis of hydatid cyst in these patients is to use chest MRI instead of chest CT scan. In compliance with the radiologist's recommendations, chest HRCT was also conducted despite the fact that the patient was pregnant.

Only one 36 × 37 mm hypoechoic lesion in the apical septum of the right ventricular was mentioned in patient’s echocardiography. However, we observed at least 3 hydatid cyst in heart wall during the exploration. Echocardiography also studies the compressing effect of cyst on heart’s performance. It is possible that chest MRI may be more accurate for studying and determining the number of heart hydatid cysts. The difference between the number of heart hydatid cysts reported in echocardiography and the number of heart hydatid cysts during the operation may be attributed to the fact that no MRI was conducted for this patient.

As for diagnosing hydatid cyst serology and keeping in mind the fact that both heart and lung hydatid cysts were healthy, the negative result of anti- *Echinococcus* antibody test can be attributed to cyst wall antibody’s failure to penetrate into patient’s serum and negation of the test. In more than 30% of the patients suffering from different types of parasites (including hydatid cyst), Eosinophilia has been reported to be more than 7% (this variable was reported 2% for this patient). Considering patient’s pregnancy and the necessity of an immediate operation on heart hydatid cyst and the teratogenic effect of albendazole, therapeutic abortion was prescribed by gynecologist.

As a result, the patient underwent an operation 2 weeks following the commencement of albendazole. To shorten the time of using heart and lung pumping device, lung hydatid cyst was removed first. Next, the patient was put on artificial lung and heart pumping device and 3 heart hydatid cysts were also enucleated. Hypertonic saline was used to prevent diffusion of hydatid cyst and reduce the possibility of relapsing during the operation.

**Conclusion**

In summary, as hydatid cyst may infect every organ, we should always be suspicious of hydatid cyst if we encounter patients with single or several cystic lesions in one or several organs, particularly in endemic regions. If a patient is diagnosed with hydatid cyst, it is necessary to examine other organs particularly liver and lung for affliction with hydatid cyst. Bronchoscopy is of no help in diagnosing lung hydatid cyst, but it is quite necessary in cases of productive cough hemoptysis or hydatid cyst rupture.

**Conflict of Interest**

All authors disclose that there was no conflict of interest.

**References**
