CEOG Clinical and Experimental Obstetrics & Gynecology

Pericardial tumor and pregnancy – a case report study

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Summary

Primary benign and malign pericardial and heart tumors are very rare (0.002-0.03%). Benign tumors of heart and pericardium are more frequent (myxoma, rhabdomyoma, lipoma, and papillary fibroelastoma of endocardium: 70% of all primary tumors). Because of low frequency, clinicians rarely and hardly diagnose these types of tumors. The affected patients wander from one healthcare center to another, usually with misleading diagnosis, such as cardiomyopathy or mitral stenosis. Pericardial and cardiac tumors cause pressure to surrounding structures. Because of the specific anatomy and function, all heart tumors are "malign by localization". Presence of benign pericardial tumor leads to pericardial effusion, fibrinohemorrhagic pericarditis, and cardiac tamponade. In the present study, the authors report a case of a female patient with pericardial cyst which was diagnosed during the second trimester of pregnancy. After undergoing multiple diagnostic procedures in short time period, the authors had accurate set of definitive diagnosis. The patient had successful surgical treatment and the pregnancy was continued until term without any fetal consequences.

Key words: Pericardial cyst; Primary pericardial tumor; Pregnancy.

Introduction

Primary benign and malign pericardial and heart tumors are very rare; secondary tumors are 20 to 40 times more common. Benign tumors of heart and pericardium are more frequent (malign: benign tumor ratio equates 3:1). Most common benign cardiac tumors are myxoma, rhabdomyoma, lipoma, and papillary fibroelastoma of endocardium: 70% of all primary tumors.

Pericardial and cardiac tumors cause pressure to surrounding structures. All heart tumors are "malign by localization", because of specific heart anatomy and function. Tumors which grow in distensible pericardial sac, could be very large (intrapericardial teratoma). Presence of benign pericardial tumor leads to pericardial effusion, fibrinohemorrhagic pericarditis. and cardiac tamponade. Other harmful effects could be malfunction of heart valves, blockage of blood flow through heart, obstruction of pulmonic and vena cava, pulmonic artery and coronary arteries, and systemic and pulmonic embolism.

Pericardial teratoma is benign tumor made of aberrant cells originating from all three embryonic germ layers. Tumor is cystic in appearance, multilocular, with solid tissue parts in between cystic parts. It is, by most of it's surface, free in pericardial sac and only attached with pedicle to the bases of heart great vessels. Because of the low incidence, clinicians rarely and hardly diagnose these types of tumors. This is the reason why affected patients wander from one healthcare center to another, usually with misleading diagnosis, such as cardiomyopathy or mitral stenosis. Benign teratoma often causes pericardial effusion (whether by direct irritation, rupture or by obstructing cardiac or pericardial lymph ducts), being a surgical emergency.

After removing the tumor, local compression of the surrounding structures stops and potential malign transformation is prevented. It is very important to carefully remove the tumor from the basis of large blood vessels of heart (the site where the tumor is attached), because that is the point where it's blood supply comes from its own vasa vasorum [1].

Case Report

A 25-year-old woman (G0 P0), in 20th gestational week of pregnancy, was admitted to the present clinic referring from the secondary center with a suspicion of pleural effusion, without any subjective or objective complaints, seven days after appendectomy. Family history included a noticeable fact that her mother had a history of ovarian carcinoma. History of present illness: the patient was admitted to secondary center hospital, Department of Gynecology and Obstetrics, seven days prior, because of lower abdominal pain. Clinical and obstetric ultrasound examinations were normal for pregnancy of 19 gestational weeks. Results of laboratory exams on admission were within normal limits. On abdominal ultrasound examination, as a sporadic finding, left pleural effusion was noticed. Because of aggravating lower abdominal pain, consultative surgeon suspected appendicitis, and on the same day appendectomy was performed. First postoperative day, because of the previously noticed pleural effusion, chest X-ray was performed.

As shown on the roentgen image, the diaphragm border could not be entirely seen, with a circular, well demarked shadow below left hemidiaphragm extending towards left hemithorax. Left phrenicocostal sinus was open (Figure 1).

Revised manuscript accepted for publication January 21, 2016

Clin. Exp. Obstet. Gynecol. - ISSN: 0390-6663
XLIV, n. 3, 2017
doi: 10.12891/ceog3485.2017

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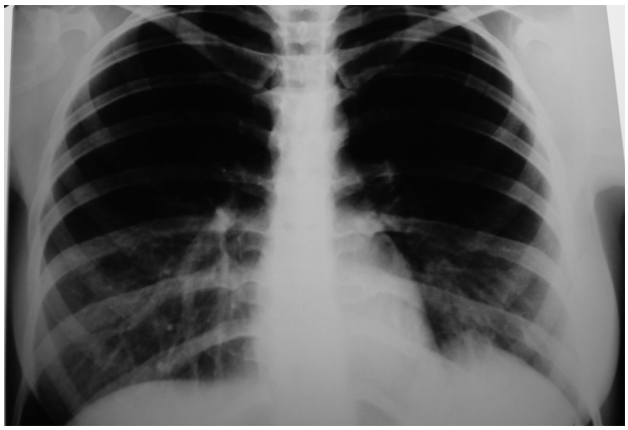

Figure 1. — Roentgen image of the chest: the diaphragm border cannot be entirely seen, with a circular, well demarked shadow below left hemidiaphragm extending towards left hemithorax. Left phrenicocostal sinus is open.

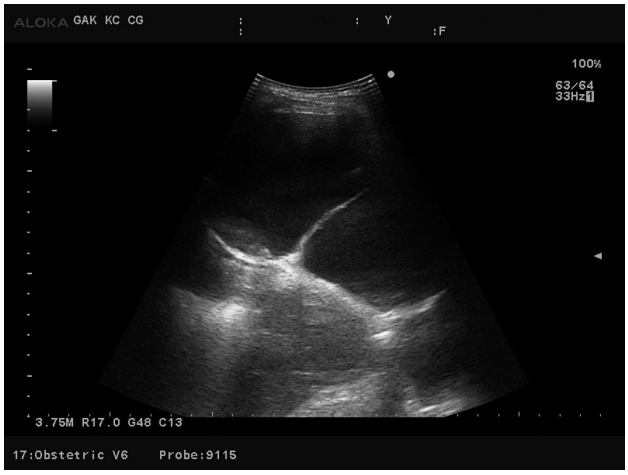

Figure 2. — Ultrasound examination through intercostal space showing a multilocular cystic tumefaction in the left hemithorax, measuring about ten cm, filled with liquid.

In differential diagnosis, echinococcal cyst, tumor and left pleural empyema were considered. Patient, without any symptoms, was treated with antibiotics and then referred to tertiary health care center - Clinical Center of Montenegro, High risk Pregnancy Department. On admission, patient's state was unchanged, obstetric ultrasound was regular for pregnancy of 20 gestational weeks, and fetal biometrics corresponded to history of amenorrhea, fetal heart function was positive, fetal dynamics and amniotic fluid index were adequate, as well as the morphology of placenta. Ultrasound examination through intercostal space showed a multilocular cystic tumefaction measuring about ten cm, filled with liquid in left hemithorax (Figure 2). Repeated abdominal ultrasonography (now performed by a radiologist) showed subdiaphragmal, encapsulated, multilocular cyst with diameter of 66 mm, between spleen and left hemidiaphragm which resembled an echinococcal cyst. After reviewing patient's documentation and clinical examination made by internist, suspicion of echinococcal cyst was made with differential diagnosis. On the same day immunological analysis of enchinococcal antigen

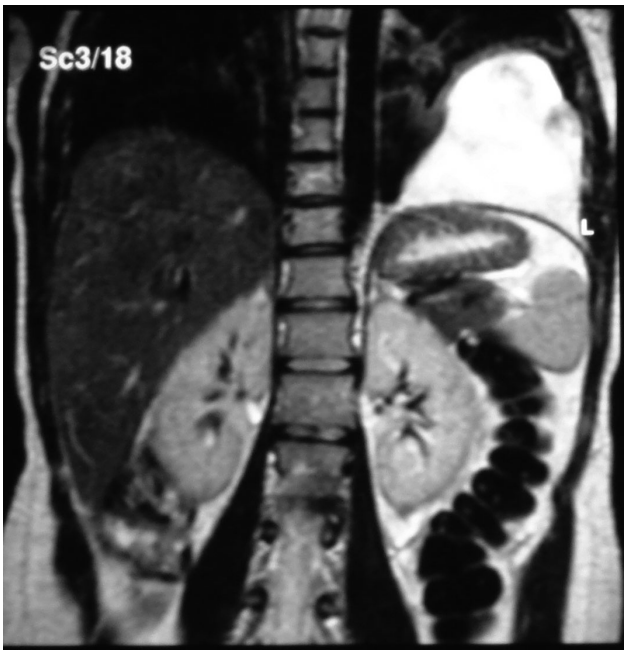

Figure 3. — MRI exam of pulmonic basis and abdomen (longitudinal scan): lightly lobulated, thick liquid collection with diameter about 106 mm, repressing diaphragm in a caudal direction located in suprabasal and basal pericardial part of left hemithorax.

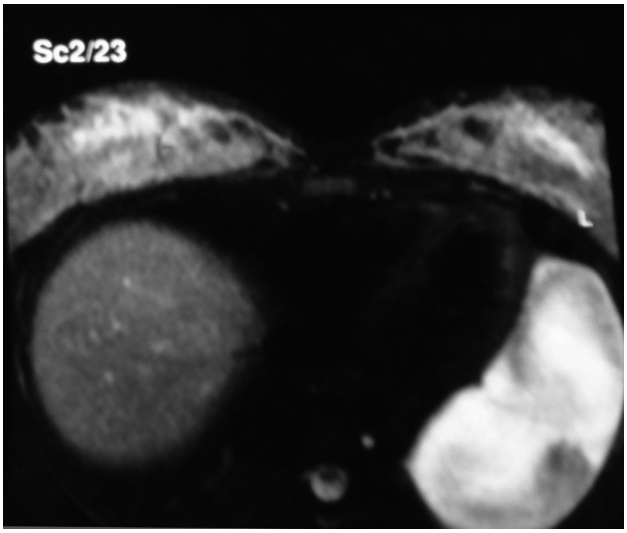

Figure 4. — MRI exam of pulmonic basis and abdomen (transverse scan): lightly lobulated, thick liquid collection with diameter about 106 mm in suprabasal and basal pericardial part of left hemithorax.

and microbiological examination of patient's sputum were conducted, but both with negative results. Because of unknown etiology and localization of the suspicious change, need for more sophisticated diagnostic mean arose. Nevertheless, CT is the gold standard for diagnostics of thoracic cavity disorders, but the authors urged for using less harmful procedure in pregnancy. The patient underwent MRI examination during her third day in the present hospital. MRI exam of pulmonic basis and abdomen

showed in suprabasal and basal pericardial part of left hemithorax, large lightly lobulated, thick liquid collection with diameter about 106 mm, which repressed diaphragm in a caudal direction. (Figures 3, 4). The same day patient became febrile and suddenly developed breathing difficulties. Symptomatic therapy was administrated. Thoracic surgeon, regarding MRI findings, suggested urgent thoracotomy which was immediately performed after adequate preparation of patient. During surgery, multilocular cystic tumefaction, ten to 12 cm in diameter, was seen situated in phrenicocostal sinus with its neck near phrenic nerve. With sharp preparation technique, after punction, the cyst was removed entirely, with successful preservation of phrenic nerve. After revision of hemostasis, two intrapleural drains were applied. Postoperative course was uneventful. Histopathological examination of the specimen confirmed the diagnosis of pericardial cyst (coelomic cyst). Macroscopically, cyst was 6.5 cm in diameter, multilocular with thin wall, and serous fluid content. Microscopic examination revealed that cystic wall consists of single flat mesothelium layer over the connective and adipose tissue beneath, with few lymphocyte infiltrations nearby hyperemic blood vessels. Patient was discharged on sixth day after surgery, in good health condition with preserved pregnancy, which continued until term.

Discussion

Pericardial cysts are uncommon mediastinal abnormalities that are usually congenital and may occur in patients of all ages, and are mostly asymptomatic. Symptoms, if present, are usually because of compression by the cystic mass (chest pain, dyspnea and paroxysmal tachypnea, epigastric fullness, cyst rupture with cardiac compression, atrial fibrillation, and even sudden death). The imaging studies used in diagnosis are echocardiography, CT, MRI, and transesophageal echocardiography. The differential diagnoses of the pericardial cyst that should be considered clinically include: echinococcal cyst, cystic hygroma, lymphangioma, angioma, lipoma, sarcomas, lymphoma, thymic lesions, bronchogenic carcinoma, metastases, granulomatous lesion and abscess, diaphragmatic hernia, and aneurysms of the heart or great vessels. The final diagnosis is confirmed by a histopathological examination of the cyst [1, 2].

Treatment is required in symptomatic patients or in those with unclear diagnosis. The indications for resection of pericardial cysts are large size, symptoms, uncertainty of malignant potential, and prevention of life-threatening emergencies. The various treatment modalities include percutaneous aspiration of cyst, ethanol sclerosis, surgical resection or video-assisted thoracoscopic surgery (VATS). If undiagnosed and untreated, the patient may present with serious complications like cardiac tamponade leading to heart failure, respiratory distress, cyst rupture leading to pleural and pericardial effusion - the life-threatening conditions, hence emergency cyst aspiration or thoracotomy may be required.

This case of pericardial cyst in a young pregnant woman was presented to highlight the fact that the diagnosis of pericardial cyst should be kept in mind, in any anterior intrathoracic cystic lesion, even though it is very rare. The outcome for benign heart tumors, like pericardial cyst, is favourable, if diagnosed before severe complications. The present case represents rapid and successful management of such pathology in a high-risk patient – pregnant woman, tangled with fetal risks, to perform all diagnostic procedures available [3-6].

References

[1] Strotmann J.: "Cardiac tumors—clinical symptoms, diagnostic approaches, and therapeutic aspects". *Med. Klin.*, 2008, *103*, 175.
[2] Singh V., Kakkar S., Arora A., Garg A., Harjai M.M.: "A rare case of intra-pericardial teratoma presenting as a mediastinal mass in an infant". *Med. J. Armed Forces India*, 2015, *71*, 49.
[3] Cohen R., Mirrer B., Loarte P., Navarro V.: "Intrapericardial mature cystic teratoma in an adult: case presentation". *Clin. Cardiol.*, 2013, *36*, 6.
[4] Yan F., Huo Q., Abudureheman M., Qiao J., Ma S., Wen H.: "Surgical treatment and outcome of cardiac cystic echinococcosis". *Eur. J. Cardiothorac. Surg.*, 2015, *47*, 1053.
[5] Lingamfelter D.C., Cavuoti D., Gruszecki A.C.: "Fatal hemopericardial tamponade due to primary pericardial mesothelioma: a case report". *Diagn. Pathol.*, 2009, *4*, 44.
[6] Rüffer A., Webinger J., Glöckler M., Purbojo A., Dittrich S., Cesnjevar R.A., Carbon R.: "Pericardial cyst or teratoma? Change of strategy during mediastinal tumor surgery". *Thorac. Cardiovasc. Surg.*, 2012, *60*, 488.

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