Cardiac Mass in a 15-Year-Old Boy

Echocardiographic Case Report

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Case Presentation

15 year-old boy

- 10-day history of chest pain that radiated to his left shoulder and aggravated by coughing and deep breathing, high fever, fatigue

- Physical examination: temperature 38°C, HR 80 bpm, BP 110/70 mmHg. Pericardial rub on heart auscultation. No jugular vein distention. Over lung fields diminished respiratory sounds along with crepitant rales on the right lung base. Liver and spleen were enlarged 2 cm below the costal margin
Case Presentation

- Laboratory exams: increased sedimentation rate (39mm/h) and white blood cell count (10600/mm³; 4% eosinophils)
- Chest x-ray: cardiomegaly
- 12-lead ECG: sinus rhythm, T-wave inversion in leads I, aVL, V₂-V₆
Transthoracic and Transesophageal Echocardiography

- Pericardial effusion (6mm behind the LV posterior wall) with strands of tissue connecting the parietal and visceral pericardia

- Multilocular cystic mass in the external surface of the LV apical-lateral wall with no blood flow within its space. Probably an other pericardial cyst next to the LV lateral wall

- Normal LV function (EF 0.58)

- Twisting of interventricular septum
Transthoracal Echocardiography

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- Normal LV function (EF 0.58)
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Multilocular cystic mass in the external surface of the LV apical-lateral wall

Twisting of interventricular septum
Pericardial effusion with strands of tissue connecting the parietal and visceral pericardia

Multilocular cystic mass in the external surface of the LV apical-lateral wall
Transesophageal Echocardiography

Multilocular cystic mass in the external surface of the LV apical-lateral wall
Magnetic Resonance Imaging

- Heterogeneous pericardial mass adjacent to the apical-lateral wall of the left ventricle with definite contours, measuring 4x3.8cm

- Thickened pericardium (>4mm)
Differential Diagnosis

- Cardiac neoplasm
- Parasitic cyst

The patient underwent cardiac surgery to excise the mass which later was identified as a hydatid cyst.
Cardiac Echinococcosis (CE)

- Echinococcosis is a widely known zoonosis caused by Echinococcus granulosus and less frequently by Echinococcus multilocularis.

- It is endemic in geographic regions with abundant grazing animals, such as South America, the Middle East, countries surrounding the Mediterranean, and Australia.

- The parasite gains access to the heart from a primary infected organ via hematogeneous spread to the coronary arteries.
Frequency of different organ damage with echinococcosis

Frequency of cyst localization in heart chambers

Cardiac Echinococcosis

- Morbidity from cardiac echinococcosis in men is 3 times higher than in women

- Clinical presentation depends on size, number, and location of the cysts and presence of the complications

- Patients may be asymptomatic or having nonspecific complaints such as fever, chest pain, weakness, and eruptions
Manifestations of Cardiac Echinococcosis

- Anaphylactic shock due to cyst rupture into the bloodstream
- Systemic hydatid embolism
- Hydatid pulmonary embolism
- Valve obstruction
- Mitral regurgitation secondary to papillary muscle involvement
- AV conduction defects
- Arrhythmias
- Pericarditis with effusion
- Cardiac tamponade due to sudden cyst rupture into pericardial space
Diagnosis of Cardiac Echinococciosis

- Serological reactions
- X-ray
- Echocardiography
- Computed Tomography
- Magnetic Resonance Imaging
Echocardiography

- It’s the diagnostic method of choice

- Classic cystic CE lesions appear as well-defined multiloculated echolucent structures

- Solidified, calcified, or degenerated CE lesions can be hyperechogenic and, thus, mimic semisolid or solid mass lesions
International Classification of Ultrasound Images in Cystic Echinococcosis
(WHO Informal Working Group, 2001)

- Type I - Unilocular active
- Type II - Multilocular active
- Type III - Transitional
- Type IV - Inactive with ball-of-wool sign
- Type V - Inactive shown calcification
Proposal for an Echocardiographic Classification System of Cardiac Echinococcosis

- Active (unilocular or multilocular and echolucent, showing double-layered cystic and hydatid sand)
- Transitional (shrunken as a result of reduced intracystic, and showing water lily sign)
- Inactive (completely degenerated contents creating the ball-of-wool sign)
Differential Diagnosis of Cardiac Hydatid Cysts

- Cavitated degenerating myxoma
- Infected intracardiac thrombus
- Pericardial cysts
- Malignant cardiac masses
- Peritoneal-venous shunt pseudocyst
Treatment of Cardiac Echinococcosis

- **Surgery**- extirpation of the cyst is recommended, because of possible occurrence of severe complications including cyst rupture and sudden death, even in asymptomatic patients.

- **Antiparasitic therapy** with benzimidazoles (mebendazole, albendazole) but can not prevent serious complications. The prolonged use of benzimidazoles is recommended after surgery to prevent the possibility of recurrences of the cyst.
THANK YOU FOR YOUR ATTENTION!