

A Hydatid Cyst In The Left Ventricle Causing Congestive Heart Failure

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Abstract

Hydatid cysts are uncommon in the heart leading to congestive heart failure. Very few such cases treated by oral albendazole have been reported. Here is one such case report of a hydatid cyst.

INTRODUCTION

Hydatid disease with cysts caused by the tapeworm *Echinococcus granulosus* is usually seen in the regions with sheep and dogs. This parasite usually settles and forms cysts in liver and lung with a frequency of 60% and 20-30% respectively¹. The involvement of other organs may occur in case of dissemination of scoleces by the blood.

However, a cardiac hydatid cyst is a rare pathology with a frequency of 0.01% to 2%². Because of the localization in myocardium, pericardium and intracavitary it may lead to different clinical manifestations and life threatening complications necessitating aggressive treatment.

The rarity of intracardiac localization, variety of clinical manifestations, diagnosis and success of medical treatment inspired us to present this case. Ideally, echinococectomy is an effective surgical treatment of isolated cardiac echinococcosis. But antiparasital treatment with albendazole has been shown to be effective in this case.

CASE REPORT

A 30 year old female of Latin American origin presented to our hospital with complains of pain in the abdomen for three weeks, pedal edema and vomiting for two weeks, dyspnoea, orthopnoea and paroxysmal nocturnal dyspnoea for two days. She was alright three weeks before when she developed all these symptoms. The patient had a similar family history with a grand mother and a few of the neighbours dying of the same complaint. On examination she had pulse rate- 92 /min, regular and low in volume, blood pressure-100/80 mmHg, and S_pO₂-99% on room air, raised central venous pressure (CVP), bilateral fine crackles

at the bases of lung, murmur of tricuspid regurgitation (systolic murmur at tricuspid area), gallop rhythm and tender hepatomegaly of 3 cms.

The patient was admitted in the intensive care unit where she was further investigated. Basic laboratory investigations like Hb-10.7gm/dl, total leucocytes counts-9060 per cu mm, neutrophil-84%, lymphocyte-13%, monocyte-3%, blood urea nitrogen-38 gm/dl and serum creatinine-1.2 gm/dl were within normal limits. Liver function tests revealed increased serum bilirubin (total -3.9mg%, direct-2.0mg%), ALT (74IU/L), AST (60IU/L), ALP (63IU/L). Other investigations revealed LDH-394IU/L, CK-67IU/L, and CPK-MB-6U/L and negative Troponin -T. Serum sodium (127.6 mmol/l) and potassium (3.7mmol/l) were within normal limit. Electrocardiogram (EKG) showed sinus rhythm, biatrial enlargement, left ventricular hypertrophy with ST-T abnormality. Chest x-ray showed cardiomegaly with basal infiltration. Echocardiography revealed multiple echogenic masses (1.4 x 1.2 cm) in the left ventricular apex, left atria size-4.6 cm, left ventricle end diastole diameter 5.9cm, left ventricle end systole

Diameter 4.9 cm, left ventricle ejection fraction (Teich) 25%, E (1.2m/sec) more than A (0.3m/sec) at mitral valve, aortic root diameter 2.5 cm, right ventricle diameter 2.6cm, type-3 diastolic dysfunction, moderate tricuspid regurgitation & moderate pulmonary arterial hypertension (PASP-46 mmHg) with normal valves. A central venous catheter was put through the right internal jugular vein. CVP was 32 mmHg. The patient was put on tab digoxin (0.25mg once a day), tab ramipril (1.25mg once a day), inj tosemide (40 mg twice a day), tab spirinolactone (50 mg twice a day),

inj dexamethasone 8mg IV three times a day and tab albendazole 400 mg twice a day for 28 days. Infusion dobutamine (6-8 mcg/kg/min) was started when systolic blood pressure went below 90 mmHg. Occasionally the patient had atrial and ventricular premature beats. There were two episodes of paroxysmal supraventricular tachycardia (PSVT) which responded to inj adenosine (3 mg) and 100 joules of direct cardioversion (DC). During these episode electrolytes were within normal limits. Clinically, the patient responded to medical treatment and CVP came down within normal limits. Left ventricular ejection fraction improved to 30%, left ventricular end diastolic diameter regressed to 5.8 cm and left ventricular end systolic diameter regressed to 4.2 cm and velocity of E wave came down to 0.6 m/sec and A wave came down to 0.1 m/sec The hydatid cyst also regressed completely as revealed by echocardiography.

Echocardiograph picture showing multiple hydatid cysts and show regression on albendazole treatment.

Figure 1

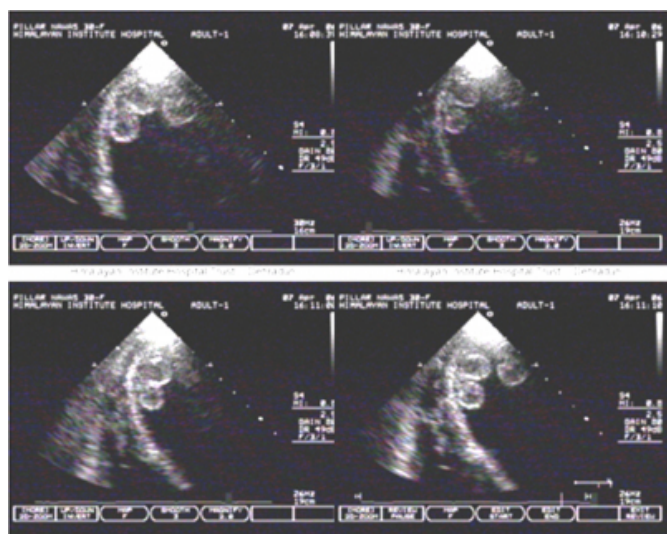
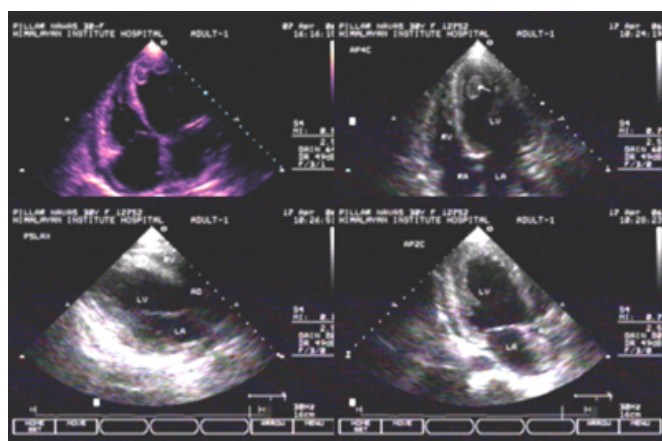


Figure 2



DISCUSSION

Echinococcosis is a parasitic disease caused by *E. granulosus*, which more commonly affects parenchymatous organs. *Echinococcus* enters the heart via the coronary circulation, either via a permanent foramen ovale or the pulmonary circulation³. The embryo reaches full growth at 1-5 year after being lodged in the heart. The myocardial reaction to cyst creates an adventitial pericyst layer⁴.

Although any part of the heart may be affected, the most common location is the free wall of left ventricle (50-77%)⁵ or the interventricular septal wall⁶ followed by atria and intracavitary area⁷.

The disease can remain asymptomatic (90%) but may incidentally result in heart failure⁸, cardiac tamponade⁹, pulmonary embolism¹⁰, stroke¹¹, atrioventricular block¹², paroxysmal supraventricular tachycardia¹³, mitral regurgitation¹⁴, pericardial effusion¹⁵, coronary artery disease¹⁶, anaphylaxis¹⁷ and death¹⁸.

Transthoracic echocardiography showing the cyst with echonegative contents and smooth contours is the most efficient method of diagnosing the hydatid cyst¹⁹. Other diagnostic steps to be taken subsequently include CT scan and MRI. Other complementary test are different types are serological test. Recently ⁶⁷Ga scintigraphy has been used to detect the lesion of *Echinococcus multilocularis* infection²⁰.

Albendazole is a benzimidazole and most promising agent for the treatment of echinococcosis at present. The recommended standard therapeutic regimen is 4 or 5 cycles of 10 mg/kg/day for 30 days with rest period of 2 weeks between cycles. Most of the cysticidal activity of albendazole seems to occur within 2-3 months of treatment

and if the cyst does not regress after two months of treatment further treatment is unlikely to help^{21, 22}. The adverse effects of treatment with Albendazole include thinning & rupture of the cyst membrane, gastrointestinal disorder, alopecia, neutropenia, proteinuria and neurological disorders²³.

Surgery using cardiopulmonary bypass is the other modality of the treatment. Indications for surgery include the danger of cyst rupture with formation of embolism and the presence of a live cyst²⁴. Echinococectomy (enucleation of the cyst) is the method of choice in the case of a live parasite²⁵. The generally accepted method is puncture and needle aspiration of the cyst contents before extirpation. Different agents like hypertonic solution, iodine solution and alcohol with different success have been used for prevention of scoleces dissemination and relapse²⁶.

CONCLUSION

Hydatid cysts of the heart are an uncommon lesion which usually develops in the left ventricle. Diagnosis should be considered in patients coming from an area where hydatid cysts are endemic. The cyst tends to grow and thus compress the neighboring myocardium. It causes displacement of the coronary vessels, rhythm disturbances and mechanical interference with the AV valves and ventricular function. Early excision with standby cardiopulmonary bypass is advisable. But in this case dramatic and complete involution of hydatid cyst and relief of clinical symptoms to oral albendazole opens the scope of medical therapy for intracardiac hydatid cyst but it needs large prospective studies.

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