

Cardiac hydatid cyst can mimic myocardial infarction

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Introduction

Hydatid disease or echinococcosis is a systemic zoonosis. The word 'hydatid' is of Greek origin and literally means a 'watery vesicle'⁽¹⁾. The commonest sites affected in children are the lungs and the liver⁽²⁾. Cysts have also been reported in the brain, eye, spleen, bones, genitourinary tract, heart, endocrine glands and subcutaneous tissues⁽³⁾.

Pathophysiology

Of the 4 known species of *Echinococcus*, 3 are of medical importance in humans. These are *Echinococcus granulosus*, causing cystic echinococcosis (CE); *Echinococcus multilocularis*, causing alveolar echinococcosis (AE); and *Echinococcus vogeli*. *E. granulosus* is the most common of the three. *E. multilocularis* is rare but is the most virulent, and *E. vogeli* is the rarest. The adult form is 5 mm long, hermaphroditic tape worm which infests the small intestine of carnivorous animals, typically dogs, foxes, coyotes, and in the case of *E. multilocularis*, small rodents. Eggs are shed in the feces of these animals and are accidentally consumed by grazing animals such as cows, sheep, buffalo, zebras, moose and caribou. In the duodenum, enzymatic digestion of the eggshell releases embryonic forms which then pass through the mucosa of the small intestine and enter the portal circulation. Once filtered by the liver or lung, the embryo transforms in to a microscopic, larval stage, the protoscolex or scolex, which is capable of multiplying asexually within the affected organ. Man is an accidental, intermediate host because it represents a terminal event for the parasite. The larval form of echinococcus can invade any organ system, and the distribution of infection is limited only by blood flow and filtration. Thus, hydatid cysts can occur in the liver in approximately 65% to 75% of cases, 25% are found in the lungs, and 5% to 10% distribute along the peripheral arterial system⁽⁴⁾. So no place is immune against hydatid cyst except hair and nails. Cardiac hydatid cysts are rare and represent 0.5-2% of all cases. Cardiac localization of hydatid cysts usually occurs in adults⁽⁵⁾. The cysts are composed of a two-layer laminated wall, an inner germinative membrane, and an outer adventitia. The two membranes are in close contact with each other but are not linked. The fluid in the hydatid cyst has a high pressure of approximately 300 mL of water and is colorless, opalescent and slightly alkaline. Inside the main hydatid vesicle, daughter cysts are usually found⁽⁶⁾.

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Treatment

Surgery remains the primary treatment and the only hope for complete cure. Chemotherapy is indicated in inoperable cases (due to location or medical condition), two or more organ involvement or disseminated hydatid disease, multiple, recurrent or inaccessible hydatid liver cysts, spontaneous intraperitoneal or intrathoracic rupture, accidental contamination of the peritoneum with cyst contents during operative cystectomy^{4,11}.

Chemotherapeutic agents: Two benzimidazoles are used, albendazole and mebendazole. Albendazole is administered in several 1-month oral doses (10-15 mg/kg/d) separated by 14-day intervals. New data for continuous treatment are emerging from China. The optimal period of treatment ranges from 3-6 months, with no further increase in the incidence of adverse effects if this period is prolonged. Mebendazole is also administered for 3-6 months orally in dosages of 40-50 mg/kg/d. Limited data are available on the weekly use of praziquantel, an isoquinoline derivative, at a dose of 40 mg/kg/wk, especially in cases in which intraoperative spillage has occurred^{4,7}.

The case

A 23-year old male was brought at night to emergency room in May 2003 complaining of chest pain with syncopal attack. The condition started 1 hour before admission with chest pain which is non specific in nature associated with sweating, pallor and syncope. Nothing of significance in the past history apart from previous history of hydatid cyst surgery 3 years ago. No family history of premature I.H.D or sudden death. His B.P at time of reception was 50/30. The patient was seen by S.H.O who ordered urgent random blood sugar (was normal) and E.C.G. which showed a Q-wave, ST-segment elevation and (hyper acute) T-wave in lead I, AVL and large T-wave in all other leads. Resuscitation was done by hydrocortisone injection 500mg bolus dose, dopamine infusion and IV fluid. Then he was admitted to the C.C.U [his grand father was admitted one day ago as a case of acute inferior M.I in the same C.C.U]. The S.H.O managed the case as acute M.I and gave him nitroglyceride tablet, isosorbide dinitrate, LMWH. (Delta parine), aspirin, pain killer, dopamine infusion in addition to iv fluid (he resumed a normotensive level on admission to the C.C.U.). In the next morning, the patient lies comfortable in his bed complaining of mild chest pain, his BP was 110 / 70, pulse rate was regular 80 / min. On auscultation, loud S1, S2, no added sound, no murmur. Chest was clear. There was nothing abnormal on clinical examination, except abdominal scar of previous surgery of H.cyst of the liver.

Investigations

including C.B.C, E.S.R, B.U.N, F.B.S, lipid profile, creatinin kinase (C.K), I..H.D were normal. Ultra sound of abdomen showed 2 hydatid cysts, one in each lobe.

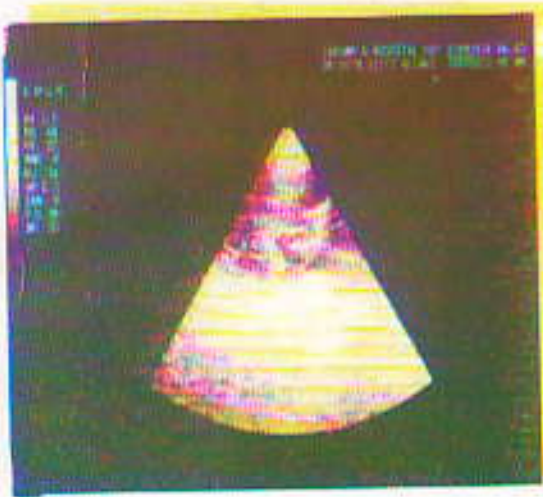
E.C.G on next day showed the same changes of previous night (no evolution), Fig.(3).

C.X.R. showed abnormal configuration of cardiac silhouette (bulging left cardiac border), Fig. (4) arrow.

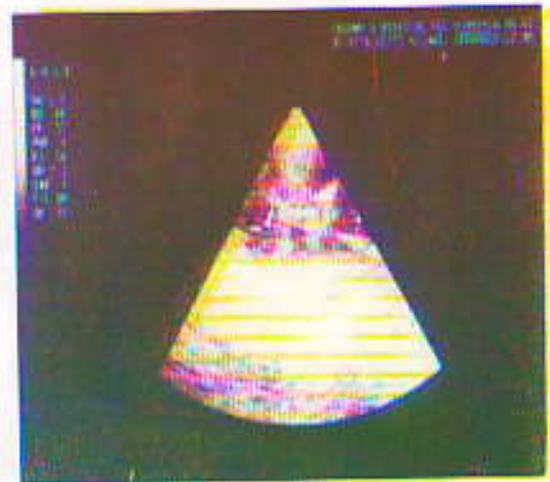
Echo. showed ruptured hydatid cyst attached to L.V anterior wall with protrusion to L.V cavity, Fig.(1,2).

C.T scan was done and confirmed the diagnosis. All the previous medications were

stopped and replaced by hydrocortisone vial (100mg) 6 hourly, cefatrixon 2g. / day, iV fluid and amiodarone as prophylactic for arrhythmia. He was doing well and then he was referred to cardio surgical hospital where the surgery was postponed because facilities problem due to country circumstances and looting of hospitals. Albendazol 400mg./day was given waiting for surgery. On September, 2004, he came back for follow up, he stoped his medication on himself after one week of treatment. The ECG and CXR show the same changes. His Echocardiogram shows a new small hydatid cyst attached to the left side of the interventricular septum, in addition to the previous cyst, Fig. (5, 6) arrows. Albendazole 400 mg twice daily was given waiting for surgery.



Fig(1)



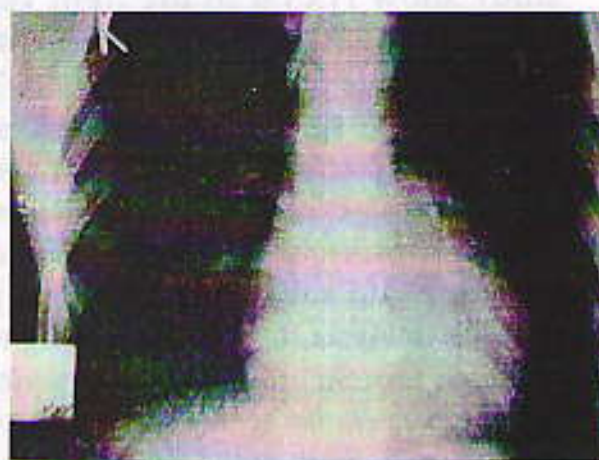
Fig(2)



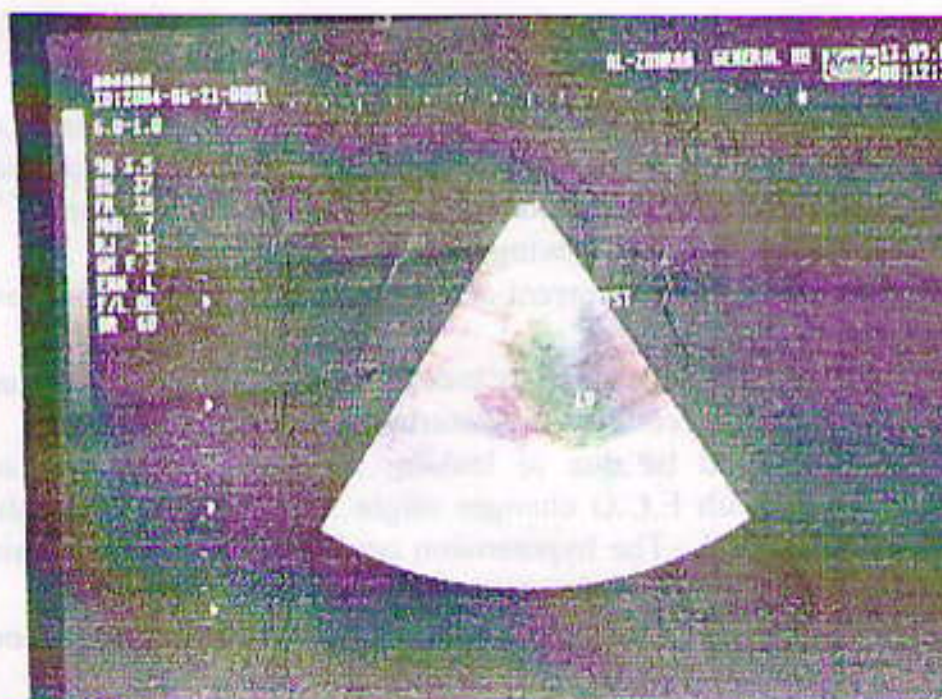
Fig(3)



Fig(5)



Fig(4)



Fig(6)

ther related cases

1. A-35-year- old female referred to echo study because of systolic murmur ,echo show mitral valve prolapse, with hydatid cyst located on inferior surface of the left ventricle near the papillary muscle.
2. A-25-year old male came to the C.C.U with severe palpitation, his E.C.G showed ventricular tachycardia,he had history of reccurent attacks of palpitation and admison to C.C.U,after electrical cardioversion,his echo –

study show H.cyst of the right ventricle.

3. A-30-year old man was admitted to the C.C.U due to sudden collapse while he was working in his farm, his B/P was 70/30 resuscitation was done by I v fluid, his E.C.G showed wide spread T- wave inversion from VI-V6, on next morning the patient developed diarrhia and maculo-papular rash ,with low B.P,his cardiac enzymes and other investigations were normal,apart from peripheral blood oesinophilia,he had history of previous pericardial effusion two years ago for which urgent paracentesis was done and anti-T.B. therapy was prescribed for presumptive diagnosis of T.B. effusion analysis of fluid according to discharge summary card, showed oesinophilia and high protein ,normal lymphocyte count. Echo was done and showed two H.cysts in the L.V.

Tapping of a pericardial effusion due to hydatid disease can further aggravate the effusion since tapping is known to reactivate the pericardial inflammation⁽⁷⁾.

4. A-30-year old man brought dead ,no any history of cardiac problem, post-mortem study show ruptured H.cyst of L.V.,no other cause death was detected.

Discussion

Hydatid disease of the heart is a very rare condition it can mimic or cause many cardiac problems, like acute myocardial infarction, pericarditis ,pericardial effusion, mitral valve prolapse,or any conduction defects and ventricular rupture⁽⁹⁾.

It can mimic acute M.I by the following:

1. Chest pain which is usually recurrent and non specific in nature however it could be retrosternal
2. Fainting or syncopal attacks caused by mechanical interference with cardiac function, by tachyarrhythmias or by conduction disturbances.
3. Hypotension: it could be due to leaking the cyst content which might cause anaphylactic shock (with E.C.G changes might misdiagnosed as cardiogenic shock) which is potentially fatal . The hypotension could be due to arrhythmias, conduction disturbances or mechanical interference.
4. Arrhythmias: any type of arrhythmias or conducting disorder can occur, the most serious is ventricular tachycardia or ventricular fibrillation.
5. Sudden death may occur due to ruptured H.cyst of the heart with anaphylaxis or fatal arrhythmias.
6. E.C.G Changes: usually show Q-wave with ST-elevation without evolution this point is very important in differentiation from acute M.I.,T-wave abnormalities might show prominent or inverted T-wave mimic subendocardial M.I.
7. Cardiac enzymes: usually normal, however they could be elevated which create further confusion with the diagnosis of a cute M.I.

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