



Archives of

**Pediatric
Infectious Diseases**

www.pedinfect.com



Hydatid Cyst of Heart, Liver and Lung

Fariba Alaei¹, Akbar Shahmohammadi², Mastaneh Alaei³, Ebrahim Soleymani^{4,*}

¹ Department of Pediatric Cardiology, Shahid Beheshti University of Medical Sciences, Tehran, IR Iran

² Department of Pediatric Cardiology, Tehran University of Medical Sciences, Tehran, IR Iran

³ Department of Pathology, Iranian Blood Transfusion Organization, Tehran, IR Iran

⁴ Department of Pathology, AJA University of Medical Sciences, Tehran, IR Iran

* Corresponding author: Ebrahim Soleymani, Department of Pathology, Besat Hospital, AJA University of Medical Sciences, Tehran, IR Iran. Tel.: +98-2139954042, Fax: +98-2139954042, E-mail: e-soleymani46@yahoo.com

ABSTRACT

Hydatid cyst of heart is uncommon. We are reporting a case of 14 years old male with liver, lung and heart hydatidosis. Diagnosis was confirmed by imaging studies and histological evaluation of surgical specimens.

Keywords: Echinococcosis; Heart; Liver; Lung

Copyright © 2013, Pediatric Infections Research Center

1. Introduction

Hydatid cyst of heart is uncommon. The prevalence of cardiac involvement by hydatid cyst is up to 2% in human echinococcosis (1-3). Right ventricle, left ventricle and interventricular septum are mostly involved sites (2, 4-6). In addition, multiorgan involvement is common during hydatidosis (3). Inasmuch as we did not find any other report of multiple hydatid cysts including cardiac involvement from Iran, We report a case of multiorgan hydatidosis with left ventricular and interventricular septum cysts.

2. Patient Presentation

A 14-year-old boy was referred to Rajaei heart center with multiple cysts in different organs. He was from

north of Iran. His presentation was an incidental cardiac murmur which was detected during a routine examination and cardiac cysts were observed in transthoracic echocardiography.

The patient was not febrile and showed no other symptoms. His physical examination revealed a 3/6 systolic murmur at the apex and left sternal border. Laboratory tests revealed mild leukocytosis with lymphocyte predominance, mild acute phase reactants elevation and normal liver function tests. Chest X ray demonstrated two densities with sharp edges at the left border of cardiac silhouette and upper lobe of left lung.

Thoracic computerized tomography and magnetic resonance imaging showed a large cyst measuring 5 × 3 cm in the interventricular septum, a smaller cyst in the left ventricular lateral wall and a cyst at the upper lobe of the

▶ Article type: Case Report; Received: 12 Nov 2012, Revised: 19 Dec 2012, Accepted: 29 Dec 2012; DOI: 10.5812/pedinfect.9098

▶ Implication for health policy/practice/research/medical education:

Since hydatidosis is a serious health problem in developing countries, its atypical presentations should always be in mind.

▶ Please cite this paper as:

Alaei F, Shahmohammadi A, Alaei M, Soleymani E. Hydatid Cyst of Heart, Liver and Lung. Arch Pediatr Infect Dis. 2013;1(2): 102-104. DOI: 10.5812/pedinfect.9098

▶ Copyright © 2013, Pediatric Infections Research Center

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

left lung (Figure 1).

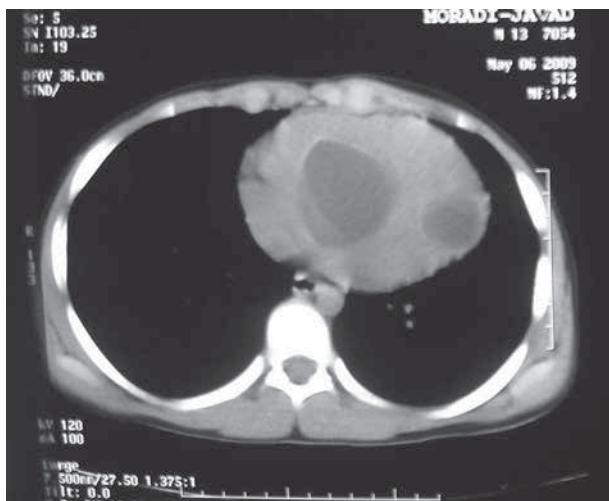


Figure 1. Thoracic CT Scan Demonstrating Cardiac Cysts

Abdominal ultrasound and computerized tomography showed a cystic lesion measuring 28×16 cm in the left lobe of the liver. Brain computerized tomography showed no abnormality or cystic involvement. Another transthoracic and a transesophageal echocardiography were performed in Rajaei heart center. Both demonstrated two space occupying cystic lesions with hypoechogenic particles inside them. One was located in the interventricular septum with large, elliptical appearance, measuring 7×3.5 cm occupying about half of the septal length. This lesion was echo-lucent with three distinct layers; the inner layer was more lucent and was detached in some parts from the others. The smaller lesion measuring 4×3 cm was located in the midway between mitral annulus and apex of the left ventricular free wall with extension to the left ventricular posterior wall. Its appearance was similar to the larger one (Figure 2). Ventricular function was normal. Mild to moderate degree of eccentric mitral regurgitation was noted. No evidence of pericardial effusion was detected.

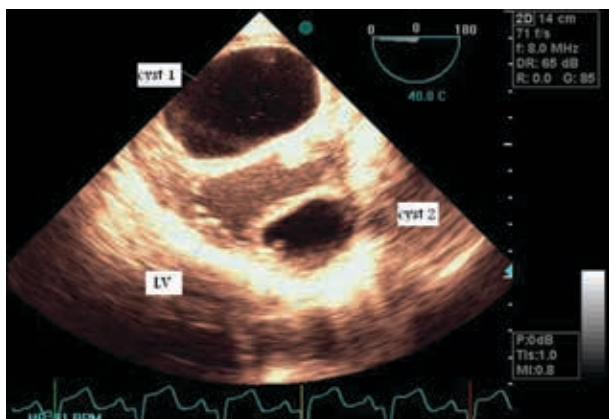


Figure 2. Transesophageal Echocardiography Showing Cardiac Cysts

Based on history, echocardiography, computerized tomography scan and magnetic resonance imaging findings, the diagnosis of hydatidosis was made. Consultation with an infectious diseases specialist was performed and the patient was treated orally with 400 mg Albendazol daily. Lung and liver cysts became smaller significantly and surgery was performed for cardiac involvement about one month after initiation of medical treatment.

Through a midsternotomy incision and under cardiopulmonary bypass both cysts and their germinal layers were removed after injection of silver nitrate inside them. Microscopic examination of the cysts showed an eosinophilic multilayered laminated structure suggesting hydatid cysts. The patient was discharged on the seventh post operative day and was advised to continue medical treatment with Albendazol.

3. Discussion

Hydatidosis is the most widespread, serious human cestode infection in the world. Domestic animals ingest the *Echinococcus granulosus* eggs while grazing. Humans are infected with intermediate stage of the parasite by ingesting food or water contaminated with eggs or by direct contact with infected dogs. The intermediate forms penetrate the gut and are carried by the vascular or lymphatic system to the liver, lungs and less commonly to other tissues (5).

Hydatid cyst is caused by the larval stage of *Echinococcus granulosus* (7). There is a potential for transmission of this parasite to humans wherever animals are herded by humans with the help of dogs (5). Cardiac hydatid cysts should be suspected in patients who have had contact with cattle and have signs of cardiac tumors or any mass close to the heart on chest X-ray (8). Our patient had had a close contact with dogs for a long time.

Patients with cardiac hydatid cysts may remain asymptomatic for many years or may have symptoms depending on the location and size of the cyst. Right ventricle, left ventricle and interventricular septum are the most common involved sites (2, 4, 9). Our patient presented with an incidental heart murmur and two left ventricular and septal cysts were observed in his echocardiography.

The effects of the cysts on the heart are usually due to cyst perforation, cyst pressure, inducing arrhythmia, angina, valvular dysfunction, pericardial reaction, pulmonary or systemic embolism and anaphylactic reaction. Nearly 90% of hydatidosis are clinically asymptomatic.

Hydatid cyst of heart is rare. Kaplan and his colleagues reported eight patients who had cardiac hydatidosis and who underwent operation between January 1988 and November 1999. All patients presented with intracavitary protrusion of the cysts. The age range of their patients was 17 to 55 years (10). Basavanagowdappa and colleges reported a 27-year-old woman with chest pain, cough, dyspnea on exertion, edema, raised jugular veins and

hepatomegaly. Chest X ray followed by thoracic and abdominal CT scans revealed multiple cysts in heart, lungs and liver. She was treated with Albendazole and surgical resection of cardiac cysts (1). Most hydatidosis cases are reported in the adult population.

Lioulas and colleges reported a 16-year-old boy presenting with respiratory distress and weight loss. Two lung cysts were detected by chest CT scan and two cardiac cysts by echocardiography. All cysts were removed surgically (3). Demirtas described a 4.5 × 5 cm cystic mass inside heart apex, together with 2.5 cm pericardial effusion in a 24-year-old male patient thorough examination of thoracoabdominal computerized tomography. They reported no other cysts in lungs or liver (11). Our patient presented with a heart murmur and cardiac cysts were detected with echocardiography. One was located in the interventricular septum with large, elliptical appearance, measuring 7 × 3.5 cm occupying about half of the septal length and the other was located in the midway between mitral annulus and the apex of the left ventricular free wall with an extension to the left ventricular posterior wall measuring 4 × 3 cm. Thoracic computerized tomography and magnetic resonance imaging showed a lung cyst and abdominal ultrasound and computerized tomography showed a liver cyst.

The current diagnosis is based on an enzyme-linked immunosorbent assay (ELISA test) for ecchinococcal antigens, which is positive in over 85% of infected patients. Ultrasound or computerized tomography will typically demonstrate cysts with walls of varying thickness (7).

Hydatidosis is still a surgical disease. For simple, accessible cysts, ultrasound or computerized tomography scans guided percutaneous aspiration, instillation of hypertonic saline and reaspiration (PAIR) after 15 minutes is the preferred therapy. Spillage with PAIR is surprisingly uncommon, but the prophylactic Albendazol therapy is routinely administered 4 hours or even 1 week prior to PAIR or surgery and is continued for 1 month thereafter (5).

For conventional surgery, the inner cyst wall (lamine and germinal layers) can be easily peeled from the fibrous layer and only the inner layers need to be removed. Patients with cysts not amenable to PAIR or surgery or with any contraindication can be managed with Albendazol 15 mg/kg/day for 1-6 months (5).

In the conditions of our case with cardiac cysts protruding into the left ventricular cavity and producing signifi-

cant mitral regurgitation with the probability of embolism, surgery was performed after initiation of medical treatment which was continued thereafter for lung and liver cysts.

Since cardiac involvement can produce significant morbidity, cardiac echocardiography should always be included in the evaluation of hydatidosis cases.

Acknowledgements

There is no acknowledgements.

Authors' Contribution

None declared.

Financial Disclosure

There is no financial disclosure.

Funding/Support

There is no support.

References

1. Basavanagowdappa H, Prakash N, Srinivas A, Babu MS, Shenoy U, Nanaiah A, et al. Hydatid cyst of the right ventricle, liver and lungs. *Indian Heart J.* 2009;61(1):97-101.
2. Erentug V, Bozbuga N, Kirali K, Mataraci I, Kaymaz C, Balkanay M, et al. Cardiac hydatid cysts: surgical treatment and results. *J Card Surg.* 2004;19(4):358-60.
3. Lioulas AG, Kokotsakis JN, Foroulis CN, Skouteli ET. Images in cardiovascular medicine. Multiple cardiac hydatid cysts: consistency of echocardiographic and surgical findings. *Tex Heart Inst J.* 2002;29(3):2269-7.
4. Kaplan M, Demirtas M, Cimen S, Ozler A. Cardiac hydatid cysts with intracavitary expansion. *Ann Thorac Surg.* 2001;71(5):1587-90.
5. Kliegman R. *Nelson textbook of pediatrics.* Philadelphia: Saunders Elsevier; 2007.
6. Orhan G, Ozay B, Tartan Z, Kurc E, Ketenci B, Sargin M, et al. [Surgery of cardiac hydatid cysts. Experience of 39 years]. *Ann Cardiol Angeiol (Paris).* 2008;57(1):58-61.
7. Brunicaudi FC. *Schwartz's principles of surgery.* McGraw-Hill, Health Pub. Division; 2005.
8. Altun O, Akalin F, Ayabakan C, Karadag B, Berrak SG, Bilal MS, et al. Cardiac echinococcosis with intra-atrial localization. *Turk J Pediatr.* 2006;48(1):76-9.
9. Gurbuz A, Tetik O, Yilik L, Emrehan B, Ozsoyler I, Ozbek C. Cardiac involvement of hydatid disease. *Jpn J Thorac Cardiovasc Surg.* 2003;51(11):594-8.
10. Kaplan M, Demirtas M, Cimen S, Ozler A. Cardiac hydatid cysts with intracavitary expansion. *Ann Thorac Surg.* 2001;71(5):1587-90.
11. Demirtas S, Yavuz C, Basyigit I, Firat U, Caliskan A. Myocardial hydatid cyst in a young male patient who feeds pet at home: a case report. *Case Report Vasc Med.* 2012:413815.