



Case Report

A giant cardiac hydatid cyst presenting with chest pain and ventricular tachycardia in a pregnant woman undergoing cesarean section



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ARTICLE INFO

Article history:

Received 17 January 2016

Accepted 7 April 2016

Available online 28 April 2016

Keywords:

Hydatid cyst

Ventricular tachycardia

Pregnancy

ABSTRACT

Cyst hydatid disease is an infectious disease caused by development of the larval form of *Echinococcus granulosus* in humans. Cardiac involvement of this disease is a rare condition, and if present, it is most commonly located in the left ventricle. Interventricular septal involvement is observed only in 4% of these cases. Herein, we report a case of cyst hydatid located at interventricular septum causing chest pain and ventricular tachycardia during cesarean section.

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1. Introduction

Cyst hydatid disease is a parasitic infection, which causes lots of important health problems, especially in undeveloped and developing countries. Cyst hydatid can be located in various tissues and the most common location is liver (50–70% of cases) and lung in humans.¹ Cardiac involvement of cyst hydatid is extremely rare and the incidence of cardiac involvement is nearly 0.5–2%.² In case of cardiac involvement, the most common location is left ventricle (60%). Other cardiac areas are right ventricle (10%), pericardium (7%), pulmonary artery (6%), left atrial appendage (6%), and the interventricular septum (4%).³ Herein, we present a pregnant woman referred to our hospital for cesarean section with unknown interventricular septal cyst hydatid complicated with ventricular tachycardia and death.

2. Case report

A 33-year-old woman was referred to our center for planned cesarean section. She did not have a remarkable previous history. Her general physical examination was normal. An abdominal mass was not palpated and she had neither hepatomegaly nor splenomegaly. Her preoperative electrocardiogram (ECG) was normal showing sinus rhythm. After routine preoperative

preparation, the patient got cesarean section with epidural anesthesia. During cesarean operation, chest pain developed, sustained ventricular tachycardia was observed in monitor, and the blood pressure declined to 80/53 mmHg (Fig. 1). Synchronous cardioversion was performed thereafter and ventricular tachycardia was terminated successfully and her blood pressure started to improve. The newborn was looking healthy with mild respiratory dysfunction. After the termination of operation, ventricular tachycardia and cardiac arrest occurred and afterwards the rhythm was asystole. After successful cardiopulmonary resuscitation, the patient was taken to coronary care unit. Transthoracic echocardiography was performed and a 28 mm × 36 mm sized mass with cystic areas was observed in the interventricular septum (Fig. 2) elongating into the left ventricular outflow tract (LVOT) and causing a pressure gradient (maximum 98, mean 58 mmHg) at LVOT. Complete blood count showed eosinophilia and serology was positive for *Echinococcus granulosus*. The thoraco-abdominal computed tomography was performed to support the diagnosis of cyst hydatid disease and the images were concordant with cyst hydatid (Fig. 3).

During follow-up in coronary care unit, the patient had intractable tachycardia and hypotension (<80/50 mmHg). Her hemodynamic parameters got worse and the blood pressure did not improve despite maximum inotropic and fluid support. The following day, cardiac arrest developed again and the patient passed unfortunately. After taking informed consent from the patient's relatives, needle aspiration was performed from the cyst under echocardiographic guidance. The microscopic examination of aspiration instance revealed the young vesicles of cyst hydatid.

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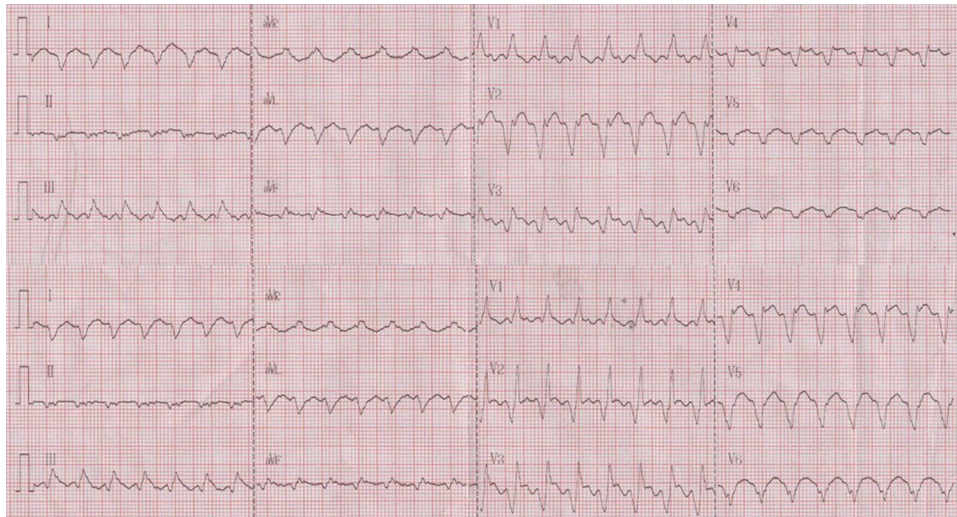


Fig. 1. Electrocardiogram showing ventricular tachycardia.

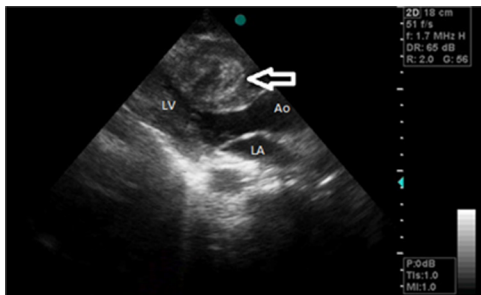


Fig. 2. Transthoracic echocardiogram showing a heterogeneous mass (arrow), including cyst filled with fluid (from apical long axis view, LV: left ventricle, LA: left atrium, Ao: aorta).

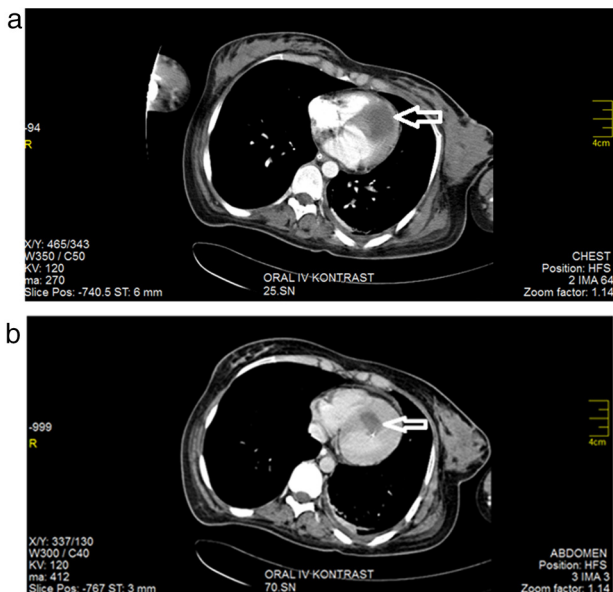


Fig. 3. (a) Thoracic CT-scan view showing a hypodense cyst of the interventricular septum (arrow) and (b) thoracic CT-scan view showing partially calcified edges of cyst (arrow).

3. Discussion

Cyst hydatid is an endemic disease caused by the larval stage of the cestode tapeworm, *E. granulosus*. Hydatid disease is endemic in tropical and subtropical regions, particularly in the Mediterranean

Basin, South America, Africa, and Australia, and affects most commonly liver and lung in humans.⁴ Isolated cardiac involvement is rare and left ventricle is the most commonly involved part due to its rich blood supply. The main pathway of cardiac involvement is coronary circulation.⁵ Heart is also infested from pulmonary circulation and direct invasion from adjacent tissues is also observed. Cardiac hydatid cysts are usually asymptomatic, but it can cause different and heterogeneous symptoms rarely according to its various localizations in heart.⁶ Chest pain is the most common symptom; however, palpitations, atrioventricular blocks, cardiac tamponade, valvular dysfunction, pulmonary or systemic embolism, pulmonary hypertension, congestive heart failure symptoms, cough, and dyspnea are also seen.⁷ Cysts of interventricular septum may present with palpitation, syncope, left ventricular outflow obstruction and conduction abnormalities. Serologic tests, enzyme-linked immunosorbent assay (ELISA), transthoracic echocardiography, computed tomography, and magnetic resonance imaging help us to diagnose the disease.⁸

In our patient, we used transthoracic echocardiography for diagnosis and we confirmed the diagnosis with serology tests and computed tomography. The echocardiography showed a heterogeneous mass with cystic areas and the computed tomography images showed partial wall calcification of cyst (Fig. 2).

Our patient, interestingly and originally, did not have any symptoms before cesarean section, and the interventricular cyst found casually after ventricular tachycardia and cardiac arrest. No mass was palpated during physical examination and we did not find any hepatosplenomegaly. Abdominal CT images confirmed the absence of any cystic lesion in liver. The only cyst hydatid focus was isolated in interventricular septum. The interventricular septal cyst hydatid is mostly responsible for varying degrees of atrioventricular and intraventricular blocks.⁹ Sometimes, the cyst located in the upper part of interventricular septum can induce obstruction of left ventricular outflow tract or right ventricular outflow tract, which cause syncope or heart failure symptoms.¹⁰ Ventricular tachycardia is an extremely rare complication of cardiac cyst hydatid and has been demonstrated in few case reports.¹¹ The exact mechanism of ventricular tachycardia is unknown. There are very few cases in literature about ventricular tachycardia, which was induced with ventricular programmed stimulation, and these electrophysiological studies suggest a reentry mechanism for sustained ventricular tachycardia.¹² In our patient, another cause for VT can be the overstimulation of sympathetic system because of operation stress or anesthesia, which may trigger the reentry mechanism.

4. Conclusion

Isolated cardiac cyst hydatid is a very rare condition and most of the patients are asymptomatic. If present, cyst hydatid is most commonly located in left ventricle and may cause many life-threatening complications. Transthoracic echocardiography and computed tomography are useful in the diagnosis and localization of cardiac cyst hydatid.

Conflicts of interest

The authors have none to declare.

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