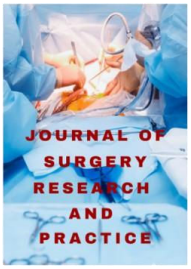

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Case Report

Bilateral Lung Hydatic Cysts Resection Concomitant with Ventricular Septal Defect Closer

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Abstract

A 10-year-old male presented to our emergency department with dyspnea on exertion, loud harsh murmur on auscultation, diagnosed as Bilateral lung Hydatic Cyst concomitant with perimembranous large Ventricular Septal Defect (VSD). Investigations and pre-operative transthoracic echocardiography and chest CT - Scan, revealed large perimembranous VSD and bilateral lung hydatic Cysts, which was confirmed bilateral lung hydatid cyst during intraoperative intervention, along with large perimembranous VSD. The lesion was successfully resected from both lungs and VSD was repaired by treated pericardial patch via median sternotomy, under CPB.

Keywords: Hydatid Cyst; Ventricular Septal Defect; *Echinococcus*; Albendazole

Introduction

Cystic hydatid disease is an infection of the *Echinococcosis* (larval stage of *Echinococcus granulosus, Echinococcus multilocularis or Echinococcus vogeli*) in human [1]. Life cycle of this zoonotic disease (cestode/tapeworm) involves dogs as definitive hosts, sheep as intermediate hosts and human as accidental intermediate hosts. In humans it's rarely located in the heart (0.5-2%) and frequently, infestations of the liver and lungs are 65% and 25% respectively atrium (8%), the right atrium (4%) and the interatrial septum (2%) accordingly but if left untreated, can still result in life-threatening complications [2].

A ventricular septal defect is (VSD) is a hole or a defect in the ventricular septum, the wall dividing the left and right ventricles of heart. This disease is from acyanotic congenital heart disease. The signs and symptoms are; shortness of breath , failure to thrive , recurrent chest infection , tachypenea , sweaty on auscultation there will be a loud systolic murmur, if the size of VSD is big and not treated on time, the Eisenmenger's syndrome will develop (i.e. the shunt will be reversed it means it normal condition the shunt's follow is from the left to right, but is in Eisenmenger's syndrome the shunt's follow will be from right to the left). The prevalence of this defect ranges from 1.56 to 53.2 per 1000 live births. VSD is the most common congenital defect in CHD and counts about 30-60 % of all congenital defects.

Case Report

A 10-year-old/male Child was admitted complaining of chest pain, palpitations and breathlessness with no fever, nausea/vomiting and no episodes of hemoptysis for a couple of years. The patient denies any history of respiratory and gastrointestinal symptoms, diaphoresis, weight loss or rash. He was left untreated and his family history, drug allergies and medication history turned up negative [3,4]. As to his social history, he is single, has no history of illicit drug abuse and he has never smoked. On physical examination Blood Pressure (BP) was 90/60 mmHg, PR was 123bpm, ECG findings are normal with no LV hypertrophy findings which are common in patients with large VSD, Spo2 was 98% in room air, temperature was 37

Celsius and RR were 31 breaths per minute. Pre-operative CXR revealed prominent left ventricle and atrium meanwhile increased vascular marking of lungs. Computed Tomography (CT) revealed bilateral hydatic cysts in left hemithorax it was in the lower zone (inferior lobe) in the right hemithorax it was in the upper lobe of right lung. Enzyme Linked Immunosorbent Test (ELISA) with IgG, hemagglutination test for the infection of echinococcosis were not performed due to low socioeconomic status of the patient. Transthoracic echocardiography showed normal biventricular function, dilated Left Ventricle (LV) and Left Atrium (LA) and large size perimembranous VSD shunting left to right, other serology assessments were within normal ranges [5,6].

The patient underwent surgery thorough a median conventional sternotomy, left pleura was opened the hydatic cysts were found, palpated, needle aspirated, pivodin injected inside the cyst and kept for 10 minutes then re-aspirated, cyst opened and removed with all layers including the germinal layer, inner layer, outer layer and daughter cysts, the cavity was ligated (purs-string suture ligation) than followed by bicaval venous and ascending aortic cannulation, the heart arrested via cold anti - grade cardioplegia, VSD was closed by treated pericardial patch via Right Atrium (RA) approach then Right pleura was opened the hydatic cysts were found, palpated and resected same as Left side, chest tubes applied and chest closed. The postoperative course was uneventful patients who was intubated for 24 hours. Albendazole was prescribed 10 mg/kg/day for 6 months post-operation, along with decongesting and anti-arrhythmic drugs (Fig. 1-5) [7-9].

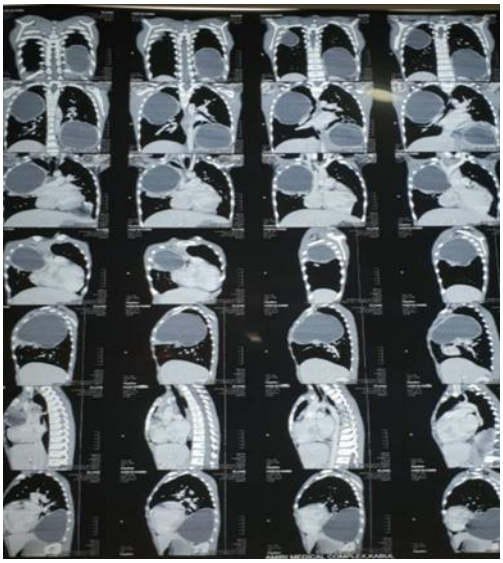

Figure 1: Chest CT scan showing bilateral lung hydatic cysts.

Figure 2: Resected hydatic cysts from lungs.

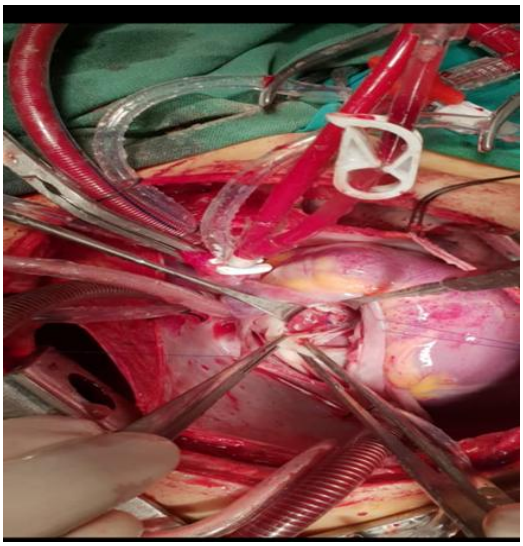

Figure 3: Intraoperative image shows Ventricular Septal Defect (VSD) closed with pericardial patch.

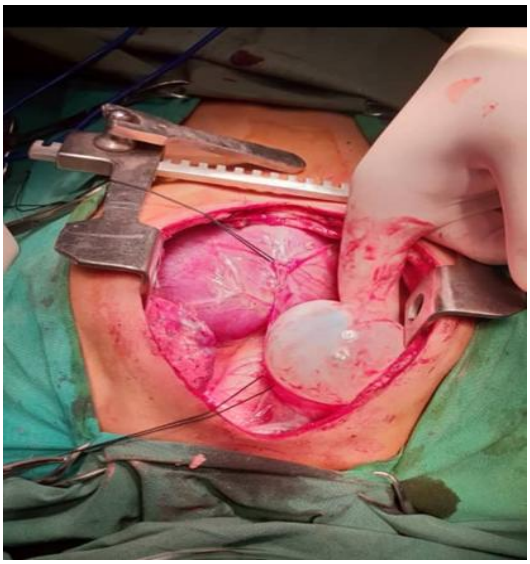

Figure 4: Right Lung hydatic cyst resected before canulation.

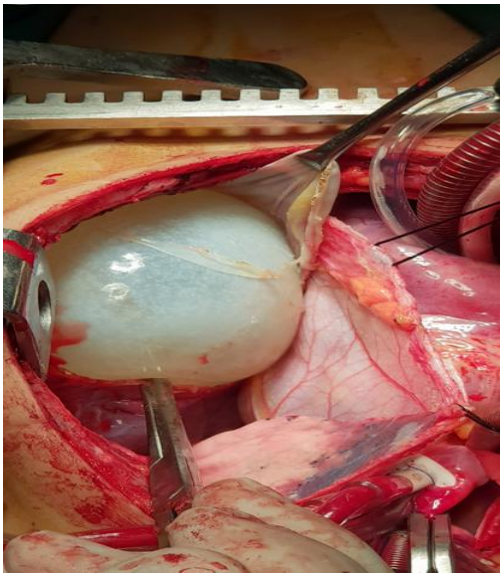

Figure 5: Left Lung Hydatid Cyst resection during on pump.

Discussion

Hydatid cyst of the heart and lungs results from the approach of the ova (hexacanth embryos) into the human intestine and entering the portal or the lymphatic system where it travels from the vascular beds of the lungs or the liver into either the coronary circulation to invade the myocardium or the portal system to invade the right side of the heart. The signs and symptoms of lung hydatic cyst includes shortness of breath, cough, fever, loss of appetite, weight loss, in case of ruptured hydatic cyst to the bronchus, the content of cyst which could be the fluid and daughter cyst will be seen in sputum or after coughing. Bilateral hydatic cyst along congenital heart defect is very rare case the prevalence is unknown. The most important point in this scenario is that if this parasite's egg (*Alveolar echinococcus* egg which primary host is the dogs, secondary is the sheep, human can be affected either by infected sheep's meat or contaminated vegetables with AE eggs), enters the body, travels to liver then to heart since there is the septal defect directly can enter in to circulatory system and migrate to anywhere in the body, including the brain and heart itself.

Conclusion

In conclusion, bilateral hydatid cyst of the lung along with congenital heart defect Ventricular Septal Defect (VSD) is very rare and clinically may present with different signs and symptoms, hence due to high risk of transmitting to heart via venous system and paradoxically migrating through main circulatory system to any part of the body rapidly, the second importance if the lung hydatic cyst ruptures the lung will be collapsed the pulmonary arterial pressure will be increased soon , since the patient' pulmonary vascular system is already over loaded due to septal defect, at last; it is worth to mention that as soon as possible the defect should be repaired in standard way using cardiopulmonary bypass, both pleural should be opened and the cysts should be respected, followed by medical therapy for at least one year post-surgery as the treatment of choice for hydatosis and six months for the VSD. Echocardiographic and serology studies and chest X-ray are recommended for 2 years to catch recurrences hyadatosis post operation and evaluation of heart function post operation.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Acknowledgement

None.

Data Availability Statement

Not applicable.

Ethical Statement

The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore, was exempt.

Informed Consent Statement

Informed consent was taken for this study.

Authors' Contributions

All authors contributed equally to this paper.

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