



Pericardial hydatid cyst and tuberculosis co-existence

Perikardiyal kist hidatik ve tüberküloz birlikteliği

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ABSTRACT

Tuberculosis and hydatid cyst are still major health problems in developing countries. Co-existence of these two infections is also seen commonly. In this article, we present a 15-year-old-girl patient who applied with cardiac tamponade accompanied by pleural and pericardial effusion and was diagnosed as pericardial hydatid cyst and pericardial tuberculosis. To the best of our knowledge, this is the first case with such feature reported in the literature.

Keywords: Children; pericardial hydatid cyst; pericardial tuberculosis.

ÖZ

Tüberküloz ve kist hidatik gelişmekte olan ülkelerde halen büyük sağlık problemleridir. Bu iki enfeksiyonun birlikteliği de yaygın olarak görülmektedir. Bu yazıda, plevral ve perikardiyal efüzyonun eşlik ettiği kardiyak tamponad ile başvuran, perikardiyal kist hidatik ve perikardiyal tüberküloz tanısı konulan 15 yaşında bir kız hasta sunuldu. Bildiğimiz kadarıyla bu, literatürde bildirilen bu nitelikteki ilk olgudur.

Anahtar sözcükler: Çocuklar; perikardiyal kist hidatik; perikardiyal tüberküloz.

Co-infection of tuberculosis (TB) and parasitic diseases is a major public health problem in developing countries.^[1] In this article, we report pericardial localization of hydatid cyst and co-existing pericardial TB for the first time in a 15-year-old girl patient.

CASE REPORT

A 15-year-old girl patient was admitted with fever, dry cough, chest pain and severe exertional dyspnea. Her symptoms had started five days ago and her exertional dyspnea increased gradually. On physical examination, the patient had a temperature of 38°C, heart rate of 110 beats/minute and blood pressure of 87/64 mmHg. She had respiratory distress with orthopnea, jugular venous distention, pulsus paradoxus and decreased heart sounds. Chest X-ray revealed gross cardiomegaly and pleural effusion at right hemithorax (Figure 1a).

Electrocardiography showed low QRS voltage and normal PR interval. Transthoracic echocardiography (ECHO) demonstrated a massive pericardial effusion. With these clinical and echocardiographic findings, the patient was diagnosed with cardiac tamponade and emergent pericardiocentesis was performed with approximately 1 L of hemorrhagic exudative fluid drained. A written informed consent was obtained from the parents.

No pathology was detected in pericardial fluid cytology and pyogenic cultures were negative. Results of pericardial fluid study were as follows: lactate dehydrogenase (LDH): 1277 U/L, total protein: 5.6 g/dL, glucose 8 mg/dL, adenosine deaminase (ADA): 46 U/L and leukocyte count: 4600/mm³ (36% lymphocytes, 43% 15 eosinophils). Tuberculosis-polymerase chain reaction (PCR) was positive in the

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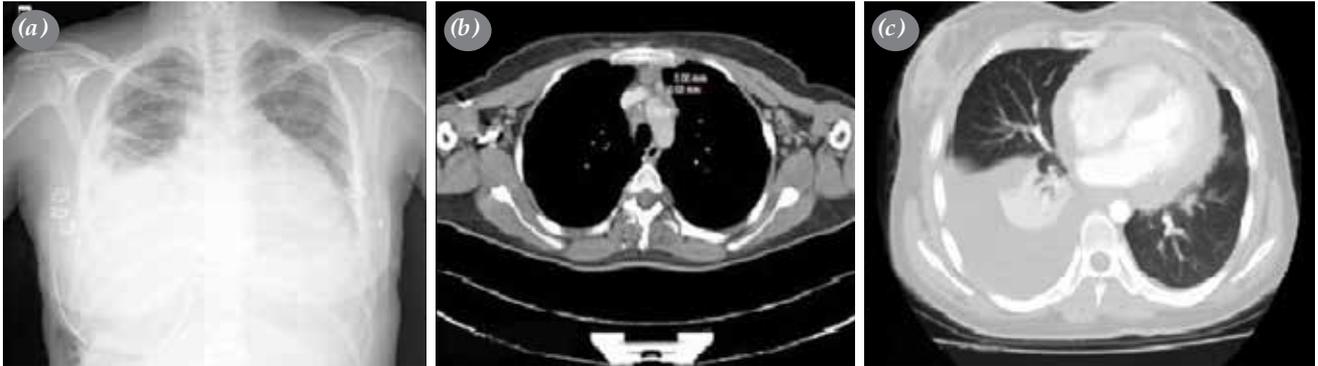


Figure 1. (a) X-ray image revealing cardiomegaly and pleural effusion on right hemithorax. (b, c) Computed tomography images show abscess-like lesion; total atelectasis in right lung and massive pleural effusion.

pericardial fluid. Tuberculin skin test result was 20 mm. Thoracentesis was performed. In the pleural fluid, LDH was 263 U/L, total protein was 5.7 g/dL, glucose was 43 mg/dL, and total leukocyte count was 520 mm³ (80% lymphocytes).

With high ADA, low glucose levels, lymphocyte dominance and TB-PCR positivity in the pericardial

fluid, accompanied by positive purified protein derivative test; the patient was diagnosed with TB pericarditis. We started anti-TB treatment with four drugs and corticosteroids.

Computed tomography scan of the chest also showed an abscess-like lesion (77x38 mm) through the whole right atrium and ventricle pericardium and

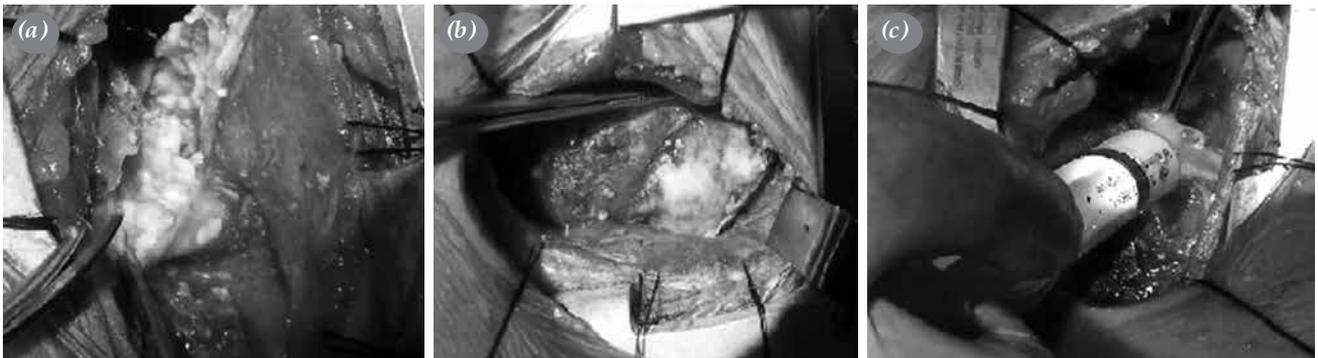


Figure 2. (a) Heart surface covered by diffuse white nodular lesions; (b) lesions were excised and (c) abscess was drained.

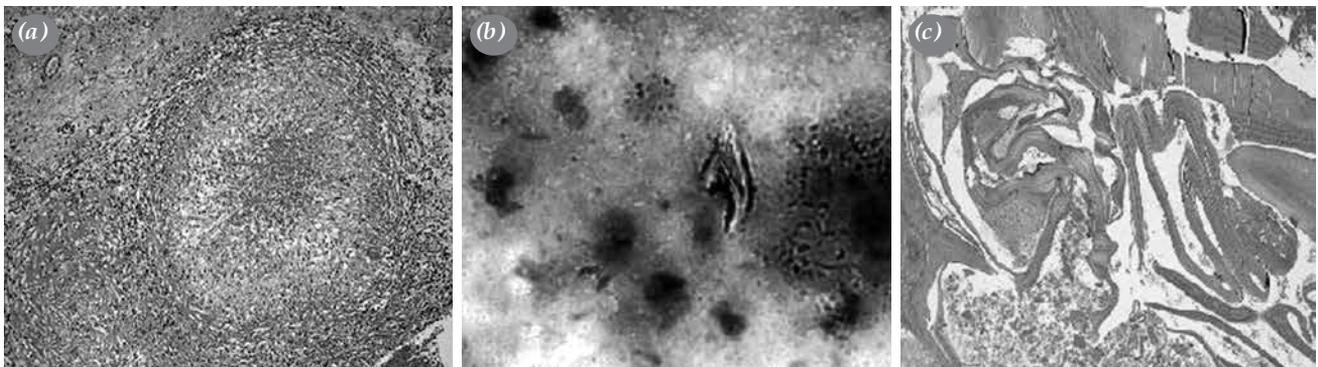


Figure 3. (a) Necrotic granulomatous inflammation (H-E×200). (b) *E. granularis* scolex (Giemsa, ×1000). (c) Lamellar fragments of cuticular membrane (H-E×100).

total atelectasis in the right lung and massive pleural effusion (Figure 1b, c). Repeated ECHO revealed fibrin-coated mass adjacent to the right ventricle.

Partial pericardiectomy and abscess drainage from the right ventricle were performed with median sternotomy. In the operation, the whole heart surface was covered by diffuse white nodular appearing lesions; these lesions were excised (Figure 2). Tuberculosis -PCR and Ziehl-Neelsen staining were negative; TB culture was sterile in the abscess drainage material. Histopathologic examination of the pericardial biopsy revealed necrotic granulomatous reaction, *Echinococcus granularis* scolex and lamellar structure suggesting cuticular membrane (Figure 3a-c). Hydatid cyst hemagglutination test titration result was 1/4096. The patient started on albendazole. Abdominal ultrasonography and contrast enhanced cranial magnetic resonance imaging scanning for hydatid cyst were normal. With necrotic granulomatous reaction in the patient's pathology, the diagnosis of TB was confirmed histologically. Isoniazid, pyrazinamide, ethambutol, and rifampicin treatment was continued for nine months. Clinical and laboratory findings of the patient were completely normal at the ninth month of treatment.

DISCUSSION

Frequency of TB in our country is 23 in 100,000 and 5.5% of these cases are children between 0-14 years old.^[2] The incidence of hydatid cysts is 3.4 in 100,000, occurring most commonly between 10-19 years. Cardiac involvement is very rare and accounts for approximately 0.2-2% of all cases and the pericardium is involved in only 10-15% of these.^[3] The most common cardiac involvement is left ventricle (50-77%), which is followed by interventricular septum, atrium, right ventricle and then pericardium, respectively.^[4]

When the literature in English language was searched, cardiac hydatid cysts were reported in 18 children under the age of 16 (11 of them from Turkey).^[5] The most common symptoms were dyspnea, cough, weight loss and fever. In two of these children, the hydatid cyst was located pericardially; only one of the patients was admitted with cardiac tamponade.

Tuberculosis is an important cause of pericardial effusion and constrictive pericarditis worldwide. Tamponade is a frequent complication of TB constrictive pericarditis, but patients do well with appropriate therapy;^[6] whereas abscess formation is a rare complication. Gulati and Sharma^[7] demonstrated 15 abscesses in 13 patients out of a group of 120 patients with constrictive pericarditis. Tuberculosis was found

to be the cause in all cases. Of the abscesses, 91% were apparent on computed tomography.^[8] The most common localization was the right atrioventricular pericardium (77%), calcifications were seen in 27% and some of the abscesses contained septations.^[6]

Tuberculosis and parasitic disease co-infection has been reported in the literature up to now in 22 case reports, seven of which were co-infection of TB-hydatid cyst. However, pulmonary TB and pulmonary and/or hepatic hydatid cysts were shown in most of these cases. To our knowledge, cardiac hydatid cyst co-infection with pulmonary TB was defined only in one case.^[1]

In this article, we reported a 15-year-old girl patient presented with cardiac tamponade accompanied by pleural and pericardial effusion who was finally diagnosed with pericardial tuberculosis and pericardial hydatid cyst. To our knowledge, such cardiac localization of the TB-hydatid cyst co-infection was defined here for the first time.

The possible reasons for tuberculosis-hydatid cyst co-infection have been investigated. Increased Th2 response in helminth infections suppresses Th1 response. Patients in whom the Th1 response has been suppressed are more susceptible to other pathogens such as viruses, bacteria and tuberculosis.^[9] Individuals with latent tuberculosis may reactivate in chronic helminth infection, and first time tuberculosis exposure during chronic helminth infection may facilitate tuberculosis infection. In addition, infection with parasitic diseases can alter the protective immune response to Bacillus Calmette-Guerin vaccination against *Mycobacterium tuberculosis*.^[10] In endemic regions of both tuberculosis and hydatid cyst like the eastern and southeastern regions of our country, it is more likely to encounter atypical localizations, clinical presentations and even co-infections as in our case.

Declaration of conflicting interests

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