




IMAGING CASES

A remarkable case of pleural effusion

Um caso impressionante de derrame pleural

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A 13-year-old boy with updated immunization was admitted to the hospital with a one-month history of well-tolerated asthenia, dyspnea, and anorexia and a two-week history of fever, chills, and night sweats. Positive findings on physical examination included diminished breath sounds on the left side of the chest and abdominal tenderness on the hepatic and splenic areas, with palpable liver 5 cm below the costal margin. Chest radiograph (**Figure 1**) showed total left lung hypotransparency and mediastinum shift to the right, and ultrasound confirmed an extensive left pleural effusion. Thoracoabdominal computed tomography scan revealed a massive pleural effusion (**Figure 2**) with generalized left pleural thickening, suggesting empyema and causing collapse of the left lung and shift of mediastinal and abdominal structures right and downwards. Blood tests showed hemoglobin of 9.9 g/dL, leucocytes of 7000/ μ L (78% neutrophils), glycemia of 94 mg/dL, C-reactive protein of 6.2 mg/dL, erythrocyte sedimentation rate of 120 mm, and negative anti-HIV antibodies. Thoracentesis was performed, with pleural fluid analysis showing glucose of 38 mg/dL, proteins of 5 g/dL, adenosine deaminase (ADA) of 56 U/L, and 213 cells/ μ L (30% neutrophils, 54% lymphocytes, and 16% monocytes). Direct smear of pleural fluid and culture tests were negative.

What is your diagnosis?



Figure 1 – Chest radiograph showing total left lung hypotransparency and mediastinum shift to the right

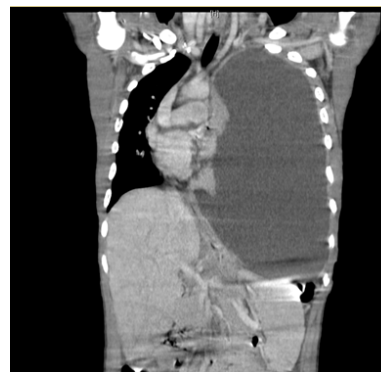


Figure 2 – Massive pleural effusion pushing mediastinal and abdominal structures right and downwards observed on thoracoabdominal computed tomography. Complete left lung atelectasis and left pleural thickening were identified.

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DIAGNOSIS

Pleural tuberculosis

DISCUSSION

Although in the present case the most common symptoms of pleural tuberculosis (TB; cough and chest pain) were denied, as well as contact with individuals with TB, TB was clinically suspected.⁽¹⁾ Pleural fluid analysis suggested pleural TB with lymphocyte predominance and ADA >40 U/L.⁽¹⁾ Initial tuberculin skin test (TST) was negative, but interferon-gamma release assay (IGRA) was later positive. Gastric aspirate was obtained in the absence of sputum, but culture test results were negative for acid-fast bacilli, and the decision was made to perform a pleural biopsy to definitively establish the diagnosis. Biopsy allowed the identification of granulomas with caseous necrotic tissue with acid-fast bacilli, and the diagnosis of pleural TB was confirmed. Polymerase chain reaction for *Mycobacterium tuberculosis* in the pleural fluid was subsequently positive. After excluding for multidrug-resistant TB, standard four-drug treatment regimen with rifampicin, isoniazid, pyrazinamide, and ethambutol was initiated according to international recommendations.⁽²⁾ Three other children in the family were subsequently diagnosed with TB. The index case was found to be an adult cousin visiting from Brazil.

Although TB is rare in children, a new pediatric diagnosis frequently reflects a recent infection in the community.^(3,4) Since TB in children is usually a paucibacillary noncavitary pulmonary disease, diagnostic confirmation is mostly based on clinical criteria, including recent close contact with a case, positive TST/IGRA, and suggestive findings on chest radiograph or physical examination.⁽²⁾ Radiographic findings tend to be more extensive than expected from the clinical history and physical observation.⁽⁵⁾

Extrapulmonary tuberculosis is more common in children than in adults, and pleural effusion is a typical finding in adolescents.⁽²⁾ Histological exam of the pleural membrane is the most probable way of establishing a pleural TB diagnosis, highlighting the importance of pleural biopsy.⁽⁵⁾

All familial contacts of a case should be tested, and children from countries with a high prevalence of TB should be considered as risk group.⁽²⁾

ABSTRACT

Tuberculosis is rare in pediatric age but remains an issue in populations with risk factors. A new pediatric diagnosis frequently reflects a recent infection in the community. Herein is reported the case of an adolescent with prolonged but well-tolerated dyspnea, anorexia, fever, and night sweats, whose radiograph showed a massive pleural effusion. Pleural fluid analysis was compatible with

pleural TB, and pleural biopsy confirmed the diagnosis. Pleural fluid polymerase chain reaction was later positive for *Mycobacterium tuberculosis*, and interferon-gamma release assay was also positive.

Keywords: dyspnea; pleural effusion; pulmonary atelectasis; tuberculosis

RESUMO

A tuberculose é uma doença rara em idade pediátrica, mas continua a ser um problema em populações de risco. Um diagnóstico de novo numa criança frequentemente traduz uma infeção recente na comunidade. É descrito o caso de um adolescente com dispneia, anorexia, febre e sudorese noturna prolongadas, mas bem toleradas, cuja radiografia evidenciou um derrame pleural de grandes dimensões. A análise do líquido pleural foi compatível com o diagnóstico de tuberculose pleural e a biópsia pleural permitiu confirmar o diagnóstico. A reação em cadeia da polimerase no líquido pleural foi posteriormente positiva para *Mycobacterium tuberculosis* e o teste de libertação de interferão gama foi igualmente positivo.

Palavras-chave: dispneia; derrame pleural; atelectasia pulmonar; tuberculose

AUTORSHIP

Ana Castelbranco-Silva - Patient care; Data curation; Investigation; Writing – original draft

Filipa A. Ferreira - Patient care; Investigation; Writing – original draft

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