

## Tuberculous Pleurisy in Children: Report of Two Cases in the Pediatric Department of the Mali Hospital

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### Abstract

### Case Report

In 2015, according to the WHO, there were 1.8 million deaths from tuberculosis worldwide. Tuberculous pleurisy is common but underdiagnosed in endemic countries. These were two boys, 5 and 10 years old, hospitalized for dyspnea in pediatrics at the Mali Hospital. They received BCG and There was no notion of TB infection. The diagnosis of tuberculous pleurisy was confirmed by histological examination of the pleura in one and by microbiology in the other. The pleural drainage associated with anti-tuberculosis treatment allowed healing without sequelae in the 2 children. Tuberculous pleurisy is common in endemic countries. Its diagnosis must be evoked before all the pleurisy in these countries.

**Keywords:** Pediatrics, pleurisy, Tuberculosis, clinical case, Mali Hospital.

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## INTRODUCTION

*Mycobacterium tuberculosis* infection is found all over the world. In 2015, according to WHO estimates, there were 10.4 million new cases of tuberculosis worldwide. The majority of cases occur in Asia (61%) and Africa (26%). A total of 1.8 million people died of tuberculosis in 2015 (including 400,000 people co-infected with HIV) [1].

Tuberculosis in children often goes unnoticed by health workers and can be difficult to diagnose and treat, when it is a sensitive indicator of the incidence of the disease [2].

Extra pulmonary tuberculosis represents 20 to 30% of pediatric cases, adenitis and tuberculous pleural effusion are the most frequent forms [2].

The frequency of pleural involvement varies greatly depending on the prevalence of the disease in the population. In endemic countries, it is very high and can reach 40% of cases. Conversely, according to a

study carried out in Canada, out of 202 cases of tuberculosis, there was 4% pleural involvement [3].

In Mali in 2016, 7,038 cases of tuberculosis of all forms were notified. Among these cases there were 4,407 cases of smear-positive pulmonary tuberculosis (63%), 539 cases of relapse (8%), 812 cases of smear-negative pulmonary tuberculosis (12%) and 1,280 cases of extra pulmonary tuberculosis (18%) [4].

We report two cases of tuberculous pleurisy in children cared for in the pediatrics department of the Mali Hospital.

## OBSERVATION I

He was a 5-year-old boy hospitalized for left pleurisy. There was no notion of TB infection in the family. He received the tuberculosis vaccine. The onset of the disease dates back to around 15 days, marked by an unquantified fever, chest pain and dyspnea. Her parents consulted in the local health center where an emergency chest X-ray revealed left pleurisy.

He was referred to the hospital for better care. On admission he had a fever of 39.6 ° C and his nutritional status was altered (Zscore <-3). The left hemithorax was slightly rounded. He had superficial polypnea, the oxygen saturation (Spo2) was 93% in air. In the left hemithorax there was dullness and the vesicular murmur was reduced there.

The rest of the examination was without much particularity. In total, he was a 5-year-old child without known medico-surgical ATCD admitted for fever, weight loss, pleural effusion syndrome and a picture of pleurisy of great abundance on standard chest radiography. The diagnostic hypotheses of bacterial pleurisy and tuberculous pleurisy were retained.

The intradermal reaction (IDR) to tuberculin was negative. The echo-guided puncture resulted in a purulent-looking liquid with hyperleukocytosis containing 80% lymphocytes and 20% neutrophils. There were no germs and the search for BK was negative.

The blood culture was negative. The blood count (NFS) showed hyperleukocytosis at 11.6 giga / l predominantly polynuclear neutrophil (PN), inflammatory anemia at 8.9 g / dl. Reactive protein C was (CRP) positive at 48 mg / dl. The HIV serology returned negative.

## RESULTAT

Surgical drainage combined with medical treatment based on injectable paracetamol at a rate of 15 mg / Kg / 6 hours in IVL, ceftriaxone injectable: 100 mg / Kg / day in a single IVD injection for 15 days and gentamycin 3 mg / Kg / day diluted in 8 ml of 0.9% saline in a single IVL injection for 3 days has been instituted. The nutritional treatment based on F75 and F100 milk has been initiated.

The course was marked by apyrexia, improvement in dyspnea, persistence of anorexia and stagnation in weight. The control chest X-ray showed pachypleuritis requiring decortication.

Histological examination of the pleura showed the appearance of granulomatous pachypleuritis of probable tuberculous origin.

A tuberculosis treatment combining rifampicin 10 mg / kg / day, isoniazid 10 mg / kg / day and pyrazinamide 30 mg / kg / day for 2 months then rifampicin 10 mg / kg / day and isoniazid 10 mg / kg / day for 4 months has been intauré.

After 2 months of treatment, the evolution was marked by clinical and radiological improvement.



Fig-1 A: Front X-ray: pleurisy of great left abundance



Fig-1B: Front radiograph: left pachypleuritis

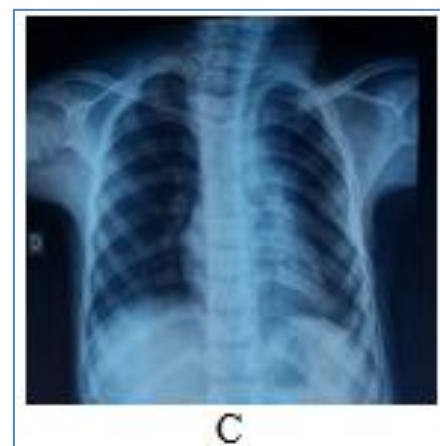


Fig-1: C: Control face radiograph after treatment: normal

## OBSERVATION II

M.W is an 11-year-old adolescent. He is hospitalized for left pleurisy of great abundance. M.W lived in a Koranic school boarding school. He received BCG at birth.

The onset of the disease dates back to about a month, marked by evening fever, anorexia, chest pain and difficulty breathing. These symptoms motivated consultations in the health center of their locality without success. He was then referred to the hospital for treatment.

At the entrance it weighed 34 kg temperature: 37 ° C height: 166 cm. His general condition was altered. He had a polypnea 26 cycles / min, Spo2 at 94% in air, a dullness and vesicular murmur diminished on the right. The rest of the clinical examination was normal.

In summary, an 11-year-old child without notable medical and surgical ATCD admitted for an infectious syndrome and pleural effusion syndrome. The hypothesis of bacterial pleurisy or tuberculous pleurisy has been raised.

The chest X-ray performed in an emergency showed right pleurisy of great abundance. The NFS showed anemia at 10.3 g / dl inflammatory, the other lines were normal. CRP was positive at 64 mg / l. The tuberculin IDR was positive at 22 mm. Direct examination of the pleural fluid showed numerous acid-fast bacilli. The culture of pleural fluid was positive for mycobacteriumtuberculosis.

## RESULTAT

Surgical drainage associated with anti-tuberculosis treatment based on rifampicin 10 mg / Kg / d, isoniazid 10 mg / Kg / d and pyrazinamide 30 mg / Kg / d andhahambutol 25 mg / Kg / d for 2 months then rifampicin 10mg / Kgs / d, isoniazid 10 mg / Kg / d for 4 months has been established and 12 sessions of respiratory physiotherapy.

The evolution was marked by the improvement of clinical signs. At first, the x-ray showed a pachypleuritis which disappeared after respiratory physiotherapy sessions.



Fig-2 A: Front radiograph: pleurisy of great abundance, right

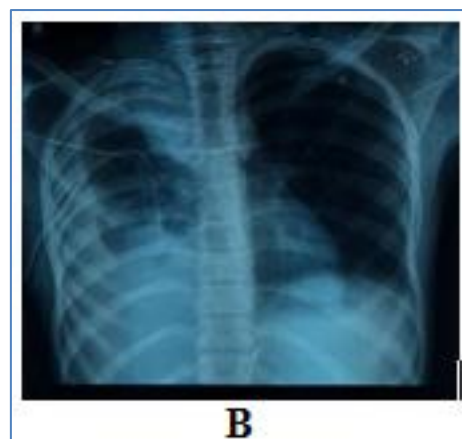


Fig-2: B: Front X-ray: right pachypleuritis

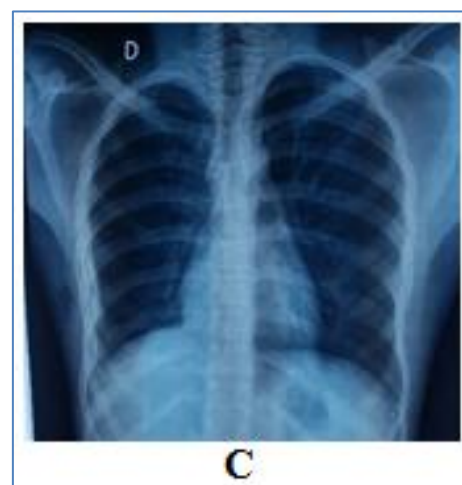


Fig-2: C: Control face radiograph after treatment: normal

## DISCUSSION

Pleural involvement is an uncommon complication of pediatric tuberculosis. It is present in 10-20% of cases. Rare in infants, it is more common in children over 10 years of age and in adolescents [5].

Pleural effusion is exudative, linked to a delayed hypersensitivity reaction to mycobacteriumtuberculosis. A small number of tubercle bacilli creates a granulomatous reaction which most often heals spontaneously, but relapses in 60% of cases [3].

The pleura can be contaminated by contiguity with the lung lesion, also by rupture of a lymph node or by hematogenous dissemination [3].

The onset is rarely abrupt with a thoracic side point, respiratory discomfort, painful dry cough and fever. Much more frequently the onset is insidious with asthenia, weight loss and fever. Clinical examination reveals a dullness with a reduction in the vesicular murmur, sometimes a pleuritic breath [6].

Usually pleural effusion is unilateral with no right or left preference. It can appear isolated on the chest radiograph without associated parenchymal or mediastinal lesion in 40% of cases. It can appear isolated without associated parenchymal or mediastinal lesions in 40% of cases. CT increases the probability of identifying associated parenchymal lesions [5].

The diagnosis is based on the tuberculin skin reaction and analysis of the pleural fluid. The liquid is usually clear. It is an exudate with typically a lymphocyte predominance and a glycopleury > 60 mg / dl. Low glycopleuria < 30 mg / dl can be observed in 15% of cases and a predominance of neutrophils may be present at the start of the disease [5].

The protein concentration is greater than 30 mg / dl with an increase in lactates, lactodehydrogenases (LDH). Adenosine deaminase (ADA) increases in cases of pleural tuberculosis with a value > 40 U / l. Interferon  $\infty$  also increases with a cut off between 0.3 and 5 mg / l [3].

Microbiological analysis is often disappointing. The direct examination is rarely positive. The diagnosis can also be made by a histological study of the pleura [7].

Tuberculosis treatment alone does not significantly change the course of pleurisy. It must be associated with surgical drainage [6].

The value of corticosteroid therapy is more discussed in tuberculous pleurisy. In this indication, it should be extended for 6 to 8 weeks. It is used to accelerate the resorption of the effusion and to avoid the repetition of the evacuation punctures [8].

In Mali, the National Tuberculosis Control Program (PNLT) is aligned with the WHO strategy for the treatment of childhood tuberculosis. This strategy recommends the 6-month regimen (2RHZE / 4RH) for the treatment of tuberculous pleurisy [9,10].

## CONCLUSION

The lack of precise diagnostic tests for tuberculosis in children is a major obstacle contributing to the risks of underdiagnosis and overdiagnosis of the disease. Many cases of childhood tuberculosis go unnoticed, including cases of tuberculous pleurisy. Its diagnosis should be brought up before any case of pleurisy in children in countries with a high prevalence.

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