

Tuberculosis in Children: Management of an 18-Month-Old Infant at the Kati/Mali Reference Health Center

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Abstract

Case Report

This is a case report of pulmonary tuberculosis in an infected 18-month-old infant treated at the Kati referral health center. The infant had been in contact with his grandmother, who was infected with tuberculosis. Following radiological and laboratory diagnosis, treatment was initiated and resulted in remission of the infection.

Keywords: Tuberculosis, child, case report.

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INTRODUCTION

Tuberculosis is a highly contagious disease caused by *Mycobacterium tuberculosis* (and sometimes *Mycobacterium bovis* or *Mycobacterium africanum*). These microorganisms are also known as tubercle bacilli or acid-fast bacilli [1].

Every day, nearly 400 children die from tuberculosis—a disease that is both preventable and curable. At least one million children contract tuberculosis annually and face difficulties adhering to treatment, which is often ill-suited for children [2].

Contact between children and individuals with tuberculosis is frequently overlooked in Mali and underestimated by the global tuberculosis community. Several factors may explain this underestimation: poverty, religious beliefs, tradition, and a lack of awareness or understanding among parents regarding the mode of transmission [3].

In 2022, Mali reported 7,897 incident cases of tuberculosis (all forms combined), including 312 cases in children, representing 4% of the total. A study involving a series of 12 cases was conducted in 2017 among children aged 0–15 years in the pediatric department of the Hôpital du Mali [4].

Children in close contact with individuals suffering from tuberculosis are at particular risk of

infection; once infected, the period immediately following infection carries the highest risk of developing active tuberculosis disease [5].

Transmission

Humans are the primary reservoir for *M. tuberculosis* (Mt). Transmission occurs from person to person. In cases of infectious (bacilliferous) tuberculosis, mycobacteria are released into the surrounding air as infectious droplets—ranging from 0.5 to 3 microns in diameter—during expectoration, coughing (expelling 3,500 bacilli), sneezing (expelling 1 million bacilli), forced expiration (induced by aerosol generation or respiratory physiotherapy), or even simply by speaking or singing [6].

Treatment regimens [7]

According to Mali's first-line treatment regimen: all new cases must receive a 6-month treatment course. retreatment cases must receive an 8-month treatment course.

The Category 3 regimen is indicated for any child with tuberculosis aged 0–14 years (PTB+, PTB-, and EPTB), regardless of the child's clinical status. 2(RHZ)E / 4(RH)

In accordance with WHO recommendations, the RH dosage for children on anti-tuberculosis treatment has been increased, and the R60H60 formulation will be used for treating tuberculosis in children during both phases:

2(R60H30Z150) (R60H60) E100 / 4(R60H30) (R60H60)

Adult-strength tablets from the Category 1 regimen must be used for any child over the age of 5 diagnosed with a new case of tuberculosis.

However, if they weigh less than 21 kg, pediatric tablets are used.

CLINICAL CASE

On September 29, 2025, the infant S.D. was referred to us from his village due to a cough and dyspnea, accompanied by a fever of 39°C.

Regarding family history: the child is the fifth of five siblings, all of whom are alive.

According to the parents, the child's grandmother had been staying with the family. She had a persistent cough; following a stay in Bamako (the capital), her children took her for a medical consultation, and she was diagnosed with tuberculosis. It should be noted that S.D.'s family are Fulani herders, and the livestock enclosure is located just 50 meters from their home.

S.D.'s medical history indicates severe respiratory distress at birth, with a Silverman score of 3. This condition necessitated a one-week hospitalization at the Kati University Hospital. Persistent xiphoid retraction is also noted.

S.D. has received all vaccines under the Expanded Programme on Immunization (EPI) and is up to date according to his vaccination record.

Diagnostic approach

Upon presentation, we examined SD, an 18-month-old infant weighing 10 kg and measuring 60 cm, with a temperature of 39°C. The initial examination suggested bronchitis. We prescribed an amoxicillin-clavulanic acid syrup, paracetamol syrup, and an antitussive. SD returned for a follow-up visit after one week of treatment; the examination revealed persistent fever and cough. We proceeded with further investigations involving blood tests.

Laboratory findings showed:

severe anemia (7.7 g/dL),
negative thick blood smear,
positive CRP (96 mg/L),
leukocytosis ($10.38 \times 10^3/\mu\text{L}$),
normal hemoglobin electrophoresis (AA),
blood glucose 0.9 g/L.

Following these results, we initiated injectable treatment with amoxicillin-clavulanic acid, paracetamol, and injectable methylprednisolone.

After one week of treatment, the follow-up examination revealed persistent fever (40°C), cough, abdominal distension, and lethargy. The infant's condition prompted us to conduct further laboratory and radiological investigations. The X-ray findings were suggestive of right-sided pleuro-bronchopneumonia (post-primary tuberculosis?).



Image: Frontal chest X-ray

AFB sputum test (Tuberculosis): Positive

Gastric lavage: *Mycobacterium tuberculosis* detected (moderate load)

Following these investigations, a diagnosis of tuberculosis was made, and S.D. was started on treatment.

Treatment

Dispersible ethambutol 100 mg: 2 tablets before breakfast

Rifampicin 75 mg, isoniazid 50 mg, and pyrazinamide 150 mg (dispersible tablets): 2 tablets in the evening before dinner; duration: 6 months

After one week of anti-tuberculosis treatment, the cough and fever resolved. S.D.'s condition improved satisfactorily.

After 6 months of treatment, a favorable outcome was observed, and follow-up tests confirmed the complete resolution of S.D.'s tuberculosis.

DISCUSSION

The young age and vulnerability of children require special attention regarding tuberculosis. Patient S.D. was 18 months old, whereas in the study by Barry I., the mean patient age was 5 months. A history of tuberculosis exposure was noted in 167 children (43.04%) [8].

We note that S.D.'s family lives in unfavorable, overcrowded conditions; his grandmother, who was infected with tuberculosis, lived with them in the same household compound. The family are livestock herders, and the animal enclosure is adjacent to the living quarters. These conditions differ from those observed by D. Soumaré *et al.*, in their study at the CHU-BSS in Kati, where 85% of patients lived in favorable conditions [2].

The occurrence of multiple tuberculosis cases, including clusters within the same family, can be attributed to overcrowding, poor hygiene, and a lack of knowledge about the disease. For instance, the patient history revealed that S.D.'s grandmother coughed and expectorated without taking precautions. A similar situation was observed in the case of I. Doumbia. Tuberculosis prevalence is rising. Pulmonary involvement is the most common form; given that a history of exposure was identified in 89% of cases in our study, it is essential to strengthen epidemiological surveillance of adults with tuberculosis. This ensures early detection and treatment, thereby reducing the incidence of tuberculosis among children [9].

Radiographic examination guided us toward the diagnosis. This contrasts with the study by D. Soumaré

et al., where all patients who underwent a frontal chest X-ray showed normal results; in that study, chest radiography did not enable the diagnosis of primary tuberculosis infection [2]. For S.D., we used short-course 6-month treatment regimens that led to complete remission of the disease. In the study by M. Tangara, these same short-course 6-month regimens (2RHZ/4RH and 2RHZE/4RH) were used for 71.4% of patients. We recorded a cure rate of 54%, a treatment abandonment rate of 12.7%, and a mortality rate of 27% [4].

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