

## Childhood Tuberculosis: Diagnostic Problems, Relating to A Case in the Health District of Douentza

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### Abstract

*Tuberculosis is a tropical pathology caused by Mycobacterium Tuberculosis. Public health problem in developing countries with a polymorphous clinical picture. OBSERVATION: It was a 67-day-old infant, weighing 3350 g, admitted for fever, whining, hacking cough, prostration for which traditional treatment based on chest massage and medical treatment at home was unsuccessful. The clinical examination revealed conjunctival pallor, dry skin, a temperature of 38°3c, and a bulging anterior fontanelle. The blood count returned to 11000/Fields. Faced with this picture, a neonatal infection or meningitis was mentioned. An initial treatment based on dual antibiotics (Ampicillin, Gentamicin) was administered without success. The evolution was marked by the persistence of the cough, respiratory distress and the lumbar puncture suggesting neonatal tuberculosis placed under protocol 2 RHZ(E)/10RE. After 22 days, the infant died.*

**Keywords:** Tuberculosis, Child, Infant, Diagnosis, Mycobacterium, Douentza.

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## INTRODUCTION

Tuberculosis (TB) is one of the most serious tropical pathologies caused by the Mycobacterium Tuberculosis complex. Tuberculosis in infants and children is characterized by polymorphic clinical pictures [1] responsible for long diagnostic and therapeutic delays, especially since diagnostic confirmation is often difficult. It is a global public health problem, especially in developing countries [2].

The WHO has estimated an annual incidence of tuberculosis at 9 million cases, and a prevalence of 14 million. [3]. In 2013, the highest number of new cases was recorded in Southeast Asia and the Western Pacific region with 56% of new cases globally.

Nearly 60% of cases are recorded in Africa, among which children represent 20 to 25% of cases. [4, 5]. The true scale of the childhood TB epidemic appears to be larger than current estimates given [6]. The

frequency of tuberculosis in children varies greatly between 24.4% of osteoarticular TB and 20.69% of pulmonary TB [3].

In a multicenter study in Niger in 2011 and 2.3% [7] in Guinea in 2018. In emerging countries, the risk of tuberculosis infection is estimated at between 2% and 5% in children, with a responsibility for deaths between 8% and 20% [8].

We report a case observed at the Reference Health Center of Douentza, the aim of which was to describe the diagnostic and therapeutic difficulties.

## OBSERVATION

It was a 67-day-old infant, weighing 3350 g, third child of the siblings, admitted to the referral health center for fever of progressive onset, whining accompanied by intermittent coughing and coughing, prostration for which the parents made a traditional

treatment based on thoracic massage then a medical treatment at home without success.

The history of pregnancy and childbirth was unremarkable apart from an unmonitored pregnancy in a context of home birth. On admission, the examination revealed a pale infant, with dry skin, obnubilation with a temperature of 38°C and an SaO<sub>2</sub> of 93%. The bulging anterior fontanel and an absence of sucking reflexes. Anthropometric measurements were normal and vaccination status unknown.

Auscultation revealed a symmetrical and harmonious thorax, well perceived vesicular murmurs with fine crackles in the pulmonary fields. Faced with this table, two hypotheses had been mentioned, in particular a neonatal infection with a pulmonary starting point and neonatal meningitis for which the child had been hospitalized.

A biological assessment carried out had returned to normal with a hemoglobin level of 12g/dl, Group/Rh A positive, a WBC of 11,000/field. A treatment based on injectable ampicillin 50mg/kg/8h, gentamicin 3mg/kg/24h, paracetamol infusion 5ml/6h and a basic ration of 70ml/kg/24h in 10% glucose serum.

The evolution after 72 hours was marked by the persistence and worsening of symptoms with a fever fluctuating between 39 and 40°C, an increasingly intense coughing fit associated with respiratory distress, desaturation with SaO<sub>2</sub> between 76 and 81%; refusal to suckle, recurrent hypoglycaemia, convulsions and bulging of the fontanel.

Given the associated meningeal syndrome, which led us to perform a lumbar puncture bringing back a citrine yellow liquid that was not cloudy, not purulent and which had concluded to hyperleukocytosis with a gram-negative staining.

This motivated the discontinuation of ampicillin and the use of ceftriaxone 100mg/kg/24h, cloxacillin 50mg/kg/8h and phenobarbital 60mg/kg in continuous infusion accompanied by oxygen therapy of 1litre/min. Despite these therapies, fever, respiratory distress, hypoglycaemia and convulsions persisted.

The resumption of the interrogation with the mother made it possible to find a notion of tuberculous contagion with a patient under treatment leading to the realization of a gastric tubing which was not conclusive. Faced with this risk factor discovered and the few clinical and biological arguments, the hypothesis of pulmonary and meningeal tuberculosis in infants was raised and the child was put on anti-tuberculosis treatment according to the 2RHZ(E)/10RH therapeutic regimen. For 19 days, under anti-tuberculosis treatment, the evolution was jagged with periods of remission with intermittent regression of symptoms.

After 22 days of follow-up, the child died suddenly in a context of neurological sequelae such as intermittent muscular twitches (2 to 3 episodes per day) associated with a notion of fever that was not quantified according to the parents.

## DISCUSSION

In 2020, approximately 9.9 million new cases of tuberculosis (127/100,000) were recorded worldwide. Most new cases occurred in Southeast Asia (43%), Africa (25%) and the Western Pacific (18%) [13]. In our observation, the clinical diagnostic approach of the disease according to Marais *et al.*, [14], helped to evoke the diagnosis of tuberculosis, in particular a persistent cough for more than 2 weeks, objective weight loss for 2 months, deterioration in general condition with significant asthenia.

Other symptoms that may reveal tuberculosis are wheezing, very characteristic of bronchial obstruction, associated with difficulty breathing, fever, loss of appetite and weight loss. Malnutrition is a comorbidity that can both be a ground favoring the occurrence of tuberculosis but also its consequence. Its frequency seems to be high in malnutrition management services because it is frequently diagnosed in malnourished children as observed by Adonis (62%) [9], unlike our study where there were no elements in favor of malnutrition.

The prevalence of BCG-vaccinated children is lower than previously reported in infants 0–12 months [10]. The vaccination status was not known in our observation, this is an indicator of incompleteness of the BCG vaccination because the delivery took place at home without the assistance of qualified personnel whereas according to the expanded vaccination programme, the BCG vaccine is given from birth up to 45 days. In our observation, we received this child after 2 months.

The low BCG vaccination coverage in children with tuberculosis was noted by Soumana. [3]. The notion of contagion is an essential criterion in the diagnosis of tuberculosis; in our observation, the infant was in contact with a patient, a tuberculosis parent under treatment in the same concession, this is consistent with the study by De Pontual which found a frequency of 67% [11]. This antecedent of contagion made it possible to evoke the hypothesis of infant tuberculosis in our context.

Tuberculosis in children can be considered as an epidemiological marker, because it is often the result of contamination by a family member who has bacilliferous pulmonary tuberculosis. In infants, the diagnosis of tuberculosis should be considered in the presence of irregular fever, apathy and sleep disturbances [16]. Some of these signs were contacted in our observation.

The hypothesis of tuberculous meningitis has been mentioned in our context because it generally occurs early after the primary infection in relation to the intensity of the infection [15]. It constitutes a fairly specific attack in the serious forms of infants and small children. The diagnosis of childhood tuberculosis is very difficult to establish, particularly in developing countries where technical means are limited. No bacteriological investigation was carried out in our context. The absence of bacteriological proof and/or the negativity of the IDR with tuberculin does not always eliminate this diagnosis.

Consistent with our observation, the diagnosis was most often based on a range of clinical arguments as stated by Miglori *et al.*, [12]. The therapeutic approach was based on the decision tree of what to do when faced with a child not vaccinated with Bacille Calmette-Guérin (BCG). [16]. The first-line 2RHZ(E)/10RH regimen was used; this significantly improved symptoms as found in the Youssouf study [16].

In emerging countries [9], the risk of tuberculosis infection is estimated at between 2% and 5% in children, with a death rate of between 8% and 20%. Even if the hospitalization of children and infants guarantees compliance and the success of the treatment; Complications can occur especially if this anti-tuberculosis treatment is not started in time. Our patient died in a context of sepsis with neurological sequelae in a context of convulsive status. The delay in anti-tuberculosis care could be explained by the delay in diagnosis.

## CONCLUSION

Despite operational strategies in the fight against tuberculosis, it remains a public health problem. Particular attention should be paid to infantile forms in health centers with limited means. A consensual and disseminated management algorithm to help improve diagnostic and therapeutic delays. Raising awareness about the disease as part of the national TB control program could significantly reduce its frequency.

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