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Research Article

Bacilliferous Tuberculosis in Children

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Abstract

Tuberculosis poses a real public health problem in the world and particularly in Africa where there is a high burden of morbidity and mortality. We here report a case of sensitive tuberculosis in a 2-year-old child hospitalized at the Medical Center of the company RVA. Thus, the screening of children exposed to an adult with smear-positive tuberculosis is an important element in allowing early management.

Keywords: Child; Tuberculosis; Bacilliferous

Introduction

Tuberculosis is a real public health problem in the world and particularly in the Democratic Republic of Congo (DRC) which is among the countries with an incidence ≥ 30 cases / 100,000 inhabitants / year. It is ranked second in Africa in terms of the burden of tuberculosis and ninth globally [1]. The World Health Organization estimates that globally 10 million people contracted tuberculosis in 2019, 5.6 million men, 3.2 million women and 1.2 million children [1].

Tuberculosis is passed from person to person through the air, and a patient with pulmonary tuberculosis, coughing, sneezing or spitting, projects tuberculosis bacilli into the air. However, it only takes another person inhaling a few of these bacilli for them to become infected [1-10]. Among people infected with the tuberculosis bacillus, the risk of developing the disease at any time in life is between 5 to 15% and a person with active untreated tuberculosis can infect up to 15 others in a year. [1-3].

The disease is often not recognized by caregivers in children and adolescents and it can be difficult to diagnose and treat with consequences for the health of the child [1-2]. Fortunately, since 2006, the specific challenges of tuberculosis in children have received increasing attention and the importance of the phenomenon as a public health problem has been increasingly recognized worldwide. Although most children with tuberculosis are not necessarily the cause of significant spread of the disease in the population, tuberculosis remains a significant contributor to infant morbidity and mortality [1-6].

This is why its early detection is necessary to stop the spread of the germ in the population and ensure better case management. Thus, the management of children with tuberculosis must comply with the Stop TB strategy, taking into account the peculiarities of the epidemiology and clinical forms of tuberculosis in children.

Patient and Observation

The 2-year-old male child had consulted at the Medical Center of the company RVA for a prolonged cough and fever that had progressed for 4 weeks, night sweats and weight loss. His background reveals that he was born quietly, weighing 2,800kg. The child was breast fed and with cow's milk. He is 3rd in the family and

the vaccination schedule is well respected. Her father is employed in a state company and her mother is a housewife. The history of her illness dates back to 4 weeks of the consultation for the general signs mentioned above. He was treated successively with Clamoxyl, Bactrim, Cefuroclav and Palucur without improvement.

He was brought to the RVA Medical Center for better care. The physical examination at the entrance showed a height of 72 cm, a weight of 9 kg and a head circumference of 52 cm. The child was polypneic with 105 cycles per minute and very severe intercostal indrawing. Lung auscultation showed increased vesicular murmur in the upper lung. The BCG scar was visible. We note the notion of counting T in the family (mother). The mother was followed at the tuberculosis screening and treatment center closer to the house and she was in her 5th month of treatment (RHEZ).

Paraclinical Examinations

Paraclinical examinations showed the following elements: A sedimentation rate at 65 mm / h, CRP at 48 mg, Intradermal reaction to tuberculin (IDRT) at 10 mm, leukocytosis at 22 350 / mm3, the predominantly neutrophilic leukocyte formula (80%) and lymphocytes at 20%, platelets at 200,000 / mm3, Hemoglobin at 9 mg%, SGOT at 25 US and SGPT at 18 US, urea at 24 mg / dl and Creatinine at 0.6 mg / dl, HIV serology orientation (To determines and Double Cheick) negative, Ziehl on sputum and gastric tubing fluid positive with two crosses in the different samples taken. The Gen-Xpert MTB / RIF sample came back positive with sensitivity to Rifampicin. Culture on Lowenstein Jensens' medium came back positive and Mycobacterium tuberculosis was isolated by the third week of incubation. The strain was sensitive to Rifampicin, Isoniazid, Ethambutol and Streptomycin.

Diagnostic

The diagnosis was smear-positive tuberculosis Treatment The child was given anti-tuberculosis drugs according to the recommendation of the National Tuberculosis Control Program, namely: Rifampicin, Isoniazid and Pyrazinamide during the intensive phase (2 months) and Rifampicin and Isoniazid for four months in the treatment phase continuation (4 months).

Evolution

Contact case tracing was carried out with all the people who lived in the same house with a view to locating other cases. However, analyzes performed on contacts was negative so far. Regarding the evolution in the child, a drop in fever and cough were noticed at the second week of treatment, as well as the negativation of the Ziehl examination on gastric tubing fluid only because the child no longer coughed. The sedimentation rate and CBC returned to normal at the 2nd, 3rd and 5th month of monitoring. We also noticed a weight gain (2Kg). In contrast, the X-ray image could be superimposed on the first to the second month of treatment and normalized at the end of anti-tuberculosis treatment.

Discussion

The urgency of the problem posed by childhood tuberculosis must be given special attention to allow better case management. The disease being contagious requires rapid and early diagnosis to reduce the risk of contamination to those around it. The source of contamination in a child is above all an adult who is often bacilliferous [1-6]. This was the case for this child infected by his mother who also had smear-positive tuberculosis. This observation agrees with that reported by Aketi *et al*. which shows that the child who presented with bacillary tuberculosis was infected by his sick father [10].

Chemlal *et al*. [11], and Khemiri *et al*. [12] and Ouédraogo / Yugbaré [13]. reported a proportion of 41.5% and 43.3% and 29.65% respectively of children infected by family members who had smear-positive tuberculosis. These authors believe that insufficient knowledge of cough hygiene is the basis of the spread of the germ, responsible for the disease. Several studies have shown that a patient with bacilliferous and progressive tuberculosis can infect 5 to 15 other people during close contact [4-13]. Man is really the main reservoir of Mycobacterium tuberculosis and this contamination is done directly by inhalation of the bacilli contained in the sputum through the droplets of Pflügge emitted during coughing by an infected subject (laughter, sneezing, speech) [1-14].

Thus, the intensity of the exposure depends on the proximity and repetition of contact, in particular sharing the same home (intra-family contact) [4-14]. Another important factor is the patient's age which is the factor in the immediate progression to the disease. The World Health Organization (WHO) shows that this risk is greatly increased in children under 2 years of age with a risk of developing the severe form of tuberculosis and this can persist until the age of 5 [1-2]. Thus, the child is a subject at risk by his relative fragility and its permanent contact with adults, which is a predilection for tuberculosis [1-5].

Tuberculosis is therefore a major cause of morbidity and mortality throughout the world and it is a global public health problem. The WHO reports that every day, nearly 400 children die from tuberculosis, which is nevertheless a preventable and curable disease if and only if all the means are available for its detection and correct management [1-2].

Unfortunately, it often happens that tuberculosis goes unnoticed because of the unspecific symptoms of the disease in children and the difficulties of diagnosis which lead to treatment, which is often

inadequate. However, the adoption of the Stop TB Strategy in 2006 made it easier to prioritize actions in favor of the most vulnerable populations, especially children, and by strengthening case-based care [1-3].

Investigation shows that despite the vaccination, the child developed tuberculosis. This is not a new fact; several surveys have already shown that being vaccinated does not prevent an individual from developing tuberculosis [4-8]. However, we know that it would reduce the occurrence of severe and / or disseminated forms of tuberculosis (meningitis, miliary and pericarditis) in children [2-16]. WHO and certain authors such as Monia Khcmiri and [12]. Tidjani *et al*. [16] have shown the protective nature of BCG among children living in contact with bacilliferous patients. Thus, BCG vaccination remains an effective preventive means in children, but it is important to achieve systematic monitoring of post-vaccination immunity with revaccination of all unprotected children (figure 1).

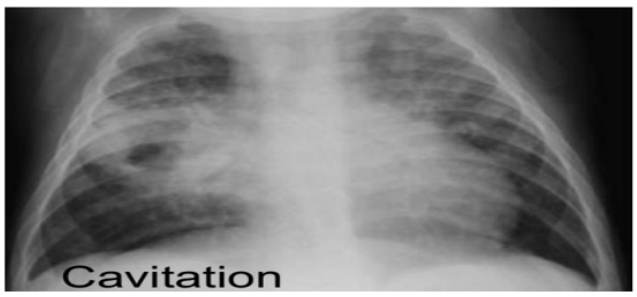

Figure 1: X-ray image showing lung lesions.

The general signs encountered in our investigation, (Long-term fever, cough for more than 4 weeks, anorexia, night sweats and weight loss) including the concept of T-counting, made it possible to suspect tuberculosis in the child. This observation is in line with those of Yousra LANDA *et al*. [17], Ouédraogo / Yugbaré *et al*. [13] and Kouéta *et al*. [18] who encountered the same clinical signs in their series. As for the inflammatory syndrome encountered in our series, it is not specific to children. However, it helps guide the diagnosis and assess the progress of children under treatment. In our series, ESR and CRP were respectively 65mm per hour and 48mg. Yousra LANDA [17] *et al*. Reported a higher CRP (85.4%) compared to that found in our series.

In addition, the bacteriological examinations showed a positive bacilloscopy, a positive culture on the medium of Lowenstein Jensens and the identification made it possible to determine the strain of Mycobacterium tuberculosis, sensitive to all the anti-tuberculosis drugs tested. Gen-Xpert MTB / RIF revealed tuberculosis sensitive to Rifampicin. These results were made possible by the analysis of spontaneous sputum and gastric tubing fluid obtained from the child. Aketi L. *et al*. [19] and S.O. Ouédraogo / Yugbaré *et al*. [13] also found positive microscopy in their series with a proportion of 14.1% and 29.65% respectively. The WHO indicates that the proportion of infected children with evidence of microscopically positive TB disease varies with age and can reach 40% in children under 5 [2-3]. Regarding the development of the child under treatment, it was marked by the disappearance of clinical signs, weight gain and the negation of bacteriological tests after adequate management of the case. Aketi *et al*. have also shown a good evolution of the case after appropriate management [10].

Conclusion

Tuberculosis is a real public health problem in the country and contact tracing of tuberculosis cases is very important in children who are often in close contact with adults as the disease continues to contribute to infant morbidity and mortality.

Conflicts of Interest

The authors declare no conflict of interest.

Contributions from the Authors

All the authors contributed to the conduct of this work. All authors also declare that they have read and approved the final version of the manuscript.

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