

Tuberculosis In Children: Diagnosis Of A Case Involving Isolated Lymphadenitis

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Abstract

Tuberculosis is one of the most prevalent infectious diseases in the world and it constitutes a major public health problem in developing countries. We here report a clinical case of pediatric isolated lymph node tuberculosis diagnosed in a regional hospital in Senegal. It involved a boy of seven years of age whose medical history was otherwise normal. He had been admitted for a symptomatology that had progressed over the past four months, comprising evening and nocturnal fever with night sweats, general asthenia, non-selective anorexia, and an unquantified progressive weight loss. At admission, he exhibited an impaired overall condition, clinical anemia, severe malnutrition with a body weight of 17.8 kg, a height of 119cm corresponding to a BMI of 12.7 kg/m² and a BMI-for-age value of -3 SD. He exhibited hard, more or less mobile, confluent, largely insensitive, bilateral, cervical macro-adenopathies, with normal looking skin in the beginning and then secondary fistulization on the right with areas of necrosis and frank pus. Anatomical pathology examination of the cervical lymph node biopsy indicated a tuberculoid granuloma. He had received an anti-tuberculosis treatment according to the national protocol. There was a favorable change after six months of treatment, with regression of the adenopathies and a weight gain of 5 kg.

Keywords: Tuberculosis; Lymph node; Child; Anatomical pathology; Senegal

Introduction

Tuberculosis is one of the most prevalent infectious diseases in the world and constitutes a major public health problem in developing countries [1]. Worldwide, the WHO reports nine million new cases each year, of which 14% have an extrapulmonary location [2]. We here report a clinical case of pediatric isolated lymph node tuberculosis diagnosed at the regional Hospital Center of Saint Louis (Senegal).

Observation

S.S.D was a boy of seven years of age, with a normal perinatal medical history and a birth weight of 3,100 g. BCG vaccine was administered at birth. His psychomotor development was good and he was enrolled in grade 2 of primary school. His body growth was normal and he is the youngest of four siblings, all of whom were alive and well. He did not have any family disorder, parental consanguinity, or tuberculous contagion. His family had a low

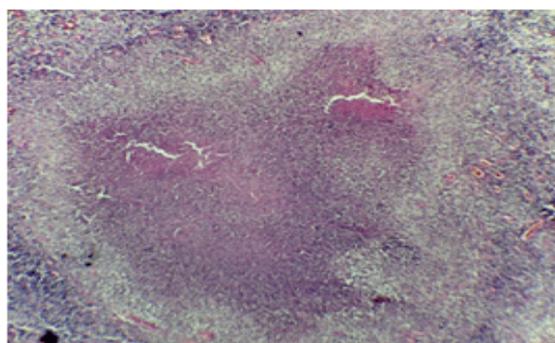
socioeconomic status. He was admitted for a symptomatology that had progressed over the past four months that comprised evening and nocturnal fever with night sweats, general asthenia, non-selective anorexia, and an unquantified progressive weight loss. In addition to this pattern of symptoms there was progressive bilateral latero-cervical tumefaction. This symptomatology had persisted despite several outpatient treatments with non-specific antibiotics. At admission, he exhibited alertness, clinical anemia, severe malnutrition with a body weight of 17.8 kg, a height of 119cm corresponding with a BMI of 12.7 kg/m² and a BMI-for-age value of -3 SD. He exhibited hard, more or less mobile, confluent, largely insensitive, bilateral, cervical macro-adenopathies, with normal looking skin in the beginning and then secondary fistulization on the right with areas of necrosis and frank pus (Figure 1).

The pulmonary examination was normal as were those of the other organs. The intradermal reaction to tuberculin revealed an induration with a diameter of 8 mm. The complete blood count revealed hyperleukocytosis of 16.79 x10⁹/mm³ and a hypochromic microcytic anemia of 7.3 g/dl. C-reactive protein was negative at 12 mg/dl. The HIV serology was negative and the hemoglobin electrophoresis was normal. The blood cultures were negative. Testing for tubercle bacilli in the expectorations was negative. The cervical lymph node biopsy with anatomical pathology examination indicated a tuberculoid granuloma (Microphotograph 1- 4).

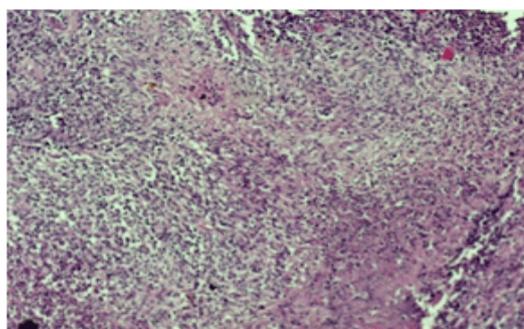
The anteroposterior chest X-ray was normal. The cervical ultrasound exhibited submaxillary and supraclavicular jugular carotid masses of dedifferentiated adenopathies. The abdominal ultrasound revealed deep hilar hepatic and aortocaval adenopathies. In light of this, a diagnosis of tuberculosis located to an isolated lymph node was made. The patient was treated with anti-tuberculosis agents according to the national protocol based on varying combinations of four drugs (rifampicine, isoniazide, ethambutol, and pirazinamide) for six months and a nutritional support based on therapeutic milk and enriched local food items. After six months there was a favorable change in his condition, with regression of the adenopathies and a weight gain of 5 kg (Figure 2).



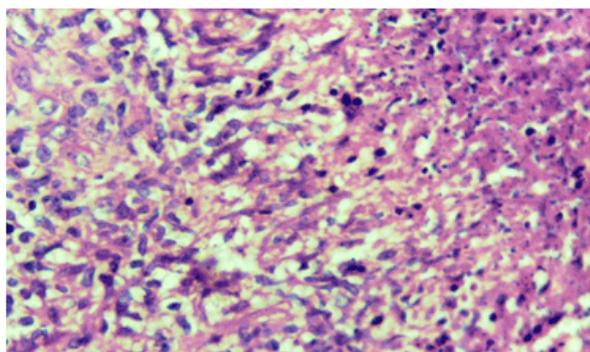
Figure 1: Fistulated cervical macro-adenopathies.



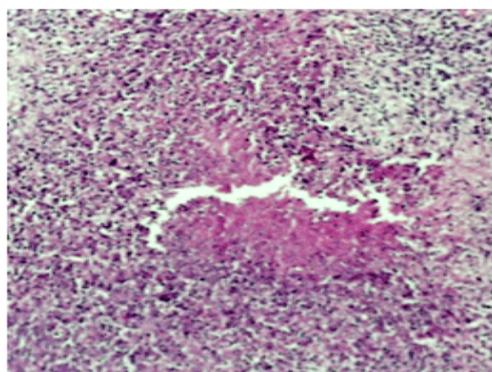
Microphotograph 1: The caseous-follicular lesion: The cracked central eosinophilic caseous necrosis.



Microphotograph 2: The tuberculous follicles comprised of epithelioid lymphocytes and plasmocytes.



Microphotograph 3: The epithelioid cells are arranged as a palisade in contact with the caseous necrosis.



Microphotograph 4: The non-homogenous nature of the caseous necrosis punctuated with altered polynuclear cells and cell debris does not make for an easy diagnosis.

Discussion

Childhood is usually the time of first contact of the host with tubercle bacilli [3]. The infection occurs exclusively by airborne transmission. For children, adults are most often the source of contact with the pathogen, although transmission between children is possible [4]. The risk factors for contamination among children comprise a low socioeconomic status, being less than five years of age, having been born in a country with a high incidence,

and a link with a first-degree relative [5]. For our patient, the risk factors appeared to be a low socioeconomic status and living in a neighborhood with a high incidence of tuberculosis. At the clinical level, *Mycobacterium tuberculosis* is a multifaceted pathological agent capable of inducing acute disease as well as a process of latent infection. Pulmonary affliction is the most common, followed by lymph node and osseous involvement. In terms of the lymph nodes, the most often affected nodes are in the neck (57%)



Figure 2: Clinical change after six months of treatment.

supraclavicular (26%); submandibular (13%) areas, and the bilateral axillary nodes (12%) [6]. In our case the adenopathies were cervical and abdominal. The cervical adenopathies were fistulated with scrofulous that are a sign of a delayed consultation, the latter being a frequent occurrence in African series [7-9]. For a long time, the intradermal reaction to tuberculin (IDRT) was the only validated test capable of identifying a tuberculosis infection in children, and it is still the main tool for this purpose [3]. The extent of the tuberculin reactivity is tightly correlated with the risk of *Mycobacterium tuberculosis*, including in populations vaccinated with BCG [10, 11]. Gamma-interferon tests are not yet commercially available in Senegal. These tests allow for identification of tuberculosis by measurement of the release of gamma-interferon by the patient's lymphocytes after stimulation with antigens that are highly specific of the *Mycobacterium tuberculosis* complex and that are absent in the BCG formulation [12, 13]. Their results are stated in a qualitative manner as being either positive, negative, or undetermined. The sensitivity of this test is less good in children, at around 80%, and their diagnostic performance is not better than that of the IDR to tuberculin [14, 15]. Needle aspiration and cytological readout is the preferred diagnosis for tuberculous adenitis. Sharma et al. however, found a somewhat greater sensitivity for cultures of surgical lymph node biopsies relative to that of needle aspirations. Our diagnosis was obtained by lymph node biopsy and histopathological examination [16]. The treatment was based on anti-tuberculosis drugs according to the national protocol in effect and nutritional care based on therapeutic milk and enriched local food items. The change after three weeks was favorable, with regression of the adenopathies and an increase in weight of 5 kg.

Conclusion

Tuberculosis is the most prevalent infectious disease in the world and it represents a major health problem in developing countries. A delayed diagnosis can be detrimental to the child and the community. Any affliction in children involving multiple lymph nodes should be reason to consider a diagnosis of tuberculosis.

Ethics Approval and Consent

This study has approved by the ethic comity of Saint Louis hospital (Senegal)

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Authors Contributions

Hady TALL, Amadou Sow, Niang Dibor, GUEYE Mbacke M, Niang S conceptualized the project and participated in drafting the manuscript

I DIAGNE participated to the correction of the manuscript.

All authors read and approved the final manuscript.

Conflicts of Interest

No competing interest

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Nil

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