

TUBERCULOUS LYMPHADENITIS IN CHILDREN –14 YEARS OF EXPERIENCE

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Abstract

Tuberculosis (TB) is a major public health problem worldwide. It is one of the main causes of infectious disease and mortality, especially in developing countries. Extrapulmonary tuberculosis accounts for 15-20 % of all types of tuberculosis. Lymph nodes are the second most common localization after pleural TB. In childhood, the most commonly evolved are the hilar lymph nodes. We analyzed the frequency of tuberculous lymphadenitis in children treated at the Institute for respiratory diseases in children-Kozle, in the last 14 years. From January 2006 to February 2020, we've treated 397 children with TB. 55 of them (13,8%), were with tuberculous lymphadenitis. Female children were 34 (61%), the others were male. The most frequent was hilar lymphadenitis at 40 (72%), second localization were cervical lymph nodes in 10 (18%).

There was 1 child with submandibular localization, 1 supraclavicular, 2 children with axillary lymphadenitis and one with mesenterial lymphadenitis. Most of the patients had contact with TB. The diagnosis was confirmed pathohistological in the patients with peripheral lymphadenitis. Tuberculosis treatment was started in all patients based on clinical criteria, exposure, positive TST, chest X-ray, or histological confirmation.

All of the patients have finished the treatment successfully. Tuberculous lymphadenitis can be a diagnostic and therapeutic challenge in children. Early diagnosis and timely initiation of therapy lead to favorable therapeutic outcome and reduce complications.

Key words: children, lymphadenitis, tuberculosis

Introduction

Tuberculosis (TB) is a communicable disease that is a major cause of infectious disease morbidity and one of the leading causes of death worldwide. An estimated 10.6 million people fell ill with TB in 2021, an increase of 4.5% from 10.1 million in 2020. About a quarter of the global population is estimated to have been infected with TB, but most people will not go on to develop TB disease and some will clear the infection [1].

In 2021, incidence of TB for N. Macedonia was 11 cases per 100,000 people. Between 2002 and 2021, incidence in our country was declining at a moderating rate to shrink from 42 cases per 100,000 people in 2002 to 11 cases per 100,000 people in 2021.

Early diagnosis and treatment of TB in children is a key factor in reducing adult TB and is very important link in controlling transmission [2, 3].

Reasons for the difficulties in diagnosing TB in children are many: respiratory specimens from younger children are difficult to obtain, M. tuberculosis is often not detectable in paucibacillary pediatric specimens and host biomarkers are not yet in place to identify children with TB disease [4, 5].

Extra pulmonary tuberculosis accounts for 15-20 % of all types of tuberculosis. Tuberculous lymphadenitis is among the most frequent presentations of extra-pulmonary tuberculosis (TB) [6]. In childhood, the most commonly involved are the hilar lymph nodes.

TB lymphadenitis may be mediastinal, intraabdominal or peripheral. The peripheral form is typically superficial, and often presents as a non-specific swelling which may be mistaken for malignant in nature [7]. Cervical lymph nodes are the most commonly affected group [8].

The aim of this study was to analyze the epidemiology, demographic characteristic, diagnostic criteria and treatment outcome of TB lymphadenitis in children in our country.

Material and methods

In this retrospective study, we studied the medical records from patients treated in the Institute for respiratory diseases in children- Kozle, in Skopje, N. Macedonia, from January 2006 to February 2020, because of tuberculous lymphadenitis. The analyzed data were demographic characteristics, clinical presentation, source of transmission, diagnostic criteria: tuberculin skin test, microbiological and imaging tests, pathohistology, treatment and outcome.

Results

From January 2006 to February 2020, 397 children with TB were treated in our institute. 55 of them (13,8%), were with tuberculous lymphadenitis.

Female children were more involved (62%), the others were male (fig. 1). The age of the children was from 1-16 years. In this study 39 children were from urban and the others from rural environment. The most frequent localization was hilar lymphadenitis in 40 children (72%). Second localization was peripheral cervical lymph nodes in 10(18%), 1 child with submandibular localization, 1 supraclavicular, 2 children with axillary lymphadenitis and one with mesenteric (fig 2). Cervical lymphadenitis was right sided in 4 children, left sided in 3 and bilaterally in 3 children.

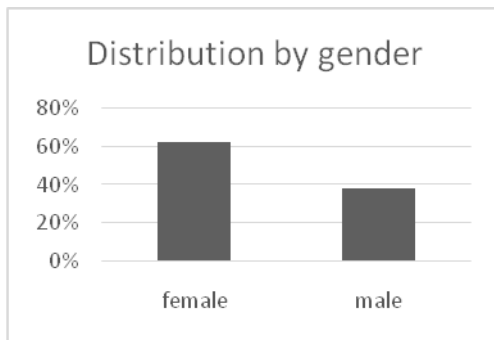


Figure 1. Distribution by gender

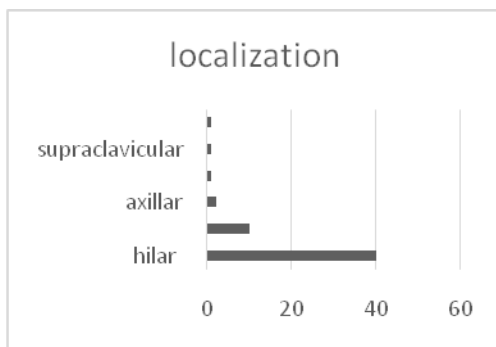


Figure 2. Localization of lymphadenitis

Most of the patients (around 75%) had a known source of transmission, and in the others was unknown or negative (fig.3). Most of the patients with positive contact were from the group of hilar lymphadenitis.

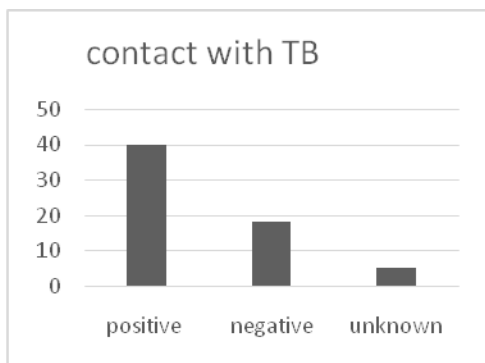


Figure 3. Source of transmission

As for the clinical signs and symptoms, of all the patients only 7 with hilar lymphadenitis reported prolongedcough, 10 children had fever , and most of the other children with hilar or peripheral lymphadenopathy didn't have accompanying symptoms (fig. 4).

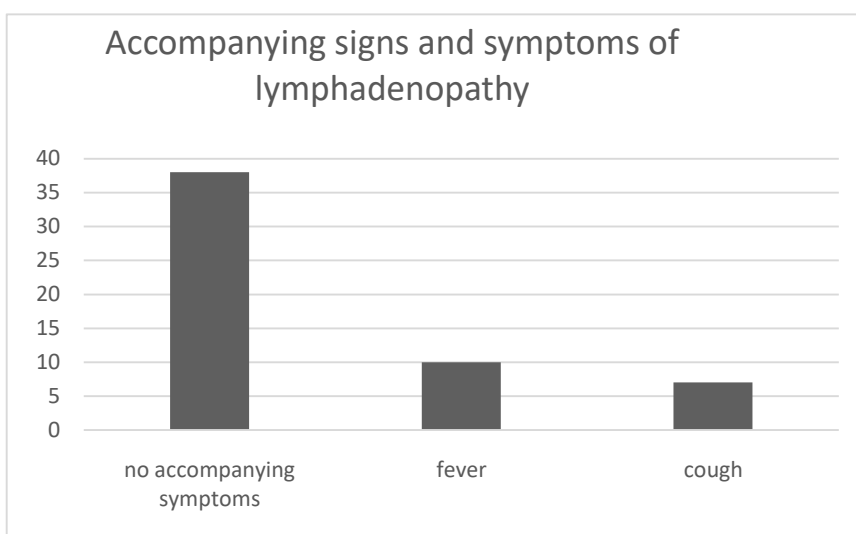


Figure 4. Accompanying signs and symptoms

Diagnostic criteria: All of the children underwent laboratory investigations such as full blood count, C reactive protein, and all were with values in the normal range. The erythrocyte sedimentation rate was elevated in 80% of the children. Also we did hepatic enzymes before initiation of therapy, and during the therapy with antituberculosis drugs, and none of the children had hepatotoxicity.

Chest X ray was performed in all of them, and was pathological in those with hilar lymphadenitis (fig. 5). The others had normal findings.

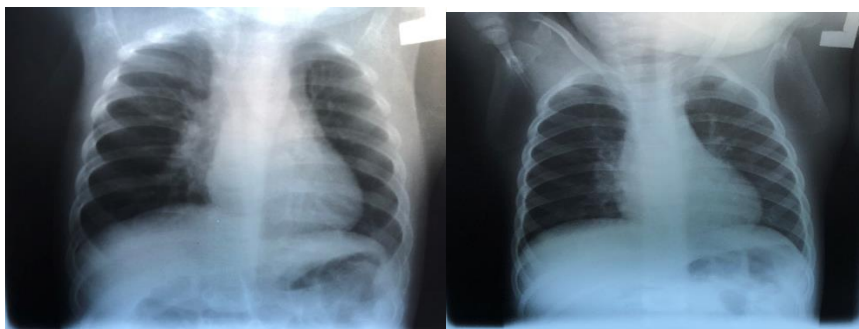


Figure 5. Chest X-ray: hilar lymphadenitis

All patients had received the Bacillus Calmette-Guerin (BCG) vaccine. Tuberculin skin test was positive in majority of the children (85%), and Quantiferon TB gold test was made in 46 children and was positive in 40 of them.

We haven't confirmed *Mycobacterium tuberculosis* on direct smear microscopy, only Gene X-pert MTB/RIF from sputum was positive in 2 children with hilar lymphadenitis.

The diagnosis in the patients with peripheral lymphadenitis was confirmed pathohistological from extirpated lymph nodes or from sample taken with fine needle biopsy. We followed those patients with ultrasonography (fig. 6, 7, 8).



Figure 6. Cervical suppurative TB lymphadenitis



Figure 7. Neck ultrasound

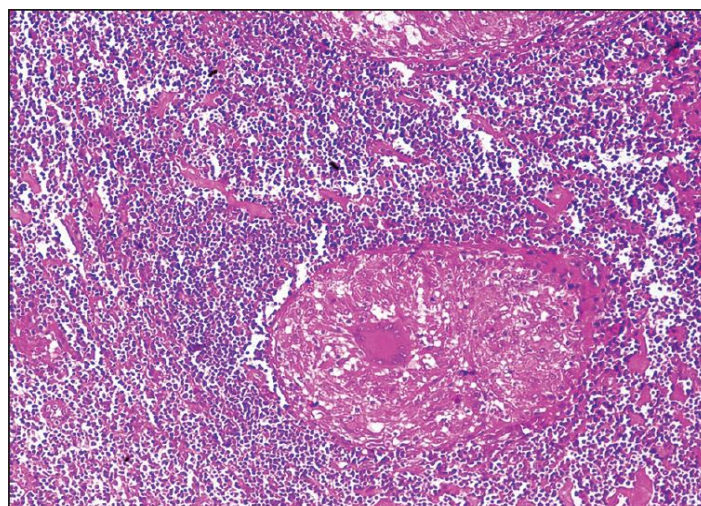


Figure 8. Caseous necrosis with Langhans type of giant cells

All patients were started on therapy (3 or 4 first-line tuberculosis agents administered orally: isoniazid, rifampicin, pyrazinamide, with or without ethambutol) based on clinical condition, positive exposure, PPD test / Quantiferon TB gold test, Chest x-ray or histological confirmation.

This initial therapy lasted for 2 months, then the continuing phase with two tuberculosis agents isoniazid and rifampicin was given for 4 or 7 months.

All of the patients have finished the treatment successfully. There were no complications or hepatotoxicity. We've followed the patients the next 2 years, all of them were in good condition and without exacerbation of the illness.

Discussion

This study covered 14 years of pediatric tuberculous lymphadenitis cases in our country. Our results showed that the most common localization was hilar, and from the peripheral lymphadenitis were cervical lymph nodes, similar to other publications [9].

According to literature, TB lymphadenitis constitutes 20–40% of extra pulmonary TB [10]. As in most published studies, it has been evidenced that lymph node TB was more common among women [11,12] which is different from the pulmonary TB, which is more frequent among men [13].

An important study limitation was that there was no bacteriologic confirmation of TB in the peripheral lymph nodes, because it was not attempted. They were treated first in other hospitals with antibiotics, and the specimens of lymph nodes were not sent for microbiology, only histopathology.

However, we are confident that the diagnosis was accurate, because all of them had a positive TST test and showed excellent clinical response to standard antituberculosis treatment. The smear microscopy from sputum was negative, according to the paucibacillary pediatric specimens.

Tuberculosis treatment for children follows the same principles as for adults. The standard four drug combination regimen of isoniazid, rifampicin, pyrazinamide, and ethambutol given daily for a period of two months followed by isoniazid and rifampicin given daily for an additional four to six months is used for treatment of drug susceptible tuberculosis, pulmonary and extrapulmonary forms. Central nervous system tuberculosis is an exception in that treatment with isoniazid and rifampicin is extended to a total of 12 months [14].

In our study there was no difference in the 6 or 9 months treatment. All of the patients had successful therapeutic outcome.

Conclusion

Tuberculous lymphadenitis can be a diagnostic and therapeutic challenge in children. Early diagnosis and timely initiation of therapy lead to favorable therapeutic outcome and reduce complications.

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