

# The profile of patients with tuberculous lymphadenitis at the National Tuberculosis Institute in Baghdad

Mohammad Yahya Abdulrazaq<sup>1</sup>, Abdulla Al-farttoosi<sup>2</sup>, Redha Al-hashimi<sup>3</sup>, Dhia Abdul Rasoul<sup>4</sup>, Abdul Wahab Abass<sup>5</sup>, Talal Shaban<sup>6</sup>

## ABSTRACT

**INTRODUCTION:** Tuberculous lymphadenitis is one of the most common types of extrapulmonary tuberculosis. Tuberculous lymphadenitis is typically affected young people and is more frequent in females. The diagnosis can be achieved using either histopathology or culture for Acid Fast Bacilli. The most promising test is the Xpert Mycobacterium tuberculosis/RIF, which has high sensitivity and specificity.

**OBJECTIVE:** to identify the clinico-demographic features of patients diagnosed with tuberculous lymphadenitis at the National TB institute in Baghdad.

**METHODS:** A descriptive case series was done at the National TB Institute in Baghdad from January 2020 till June 2020. We included all the 50 patients whom diagnosed as Tuberculous lymphadenitis during the study period. Demographic and clinical data were collected. A diagnosis of Tuberculous lymphadenitis was confirmed either by a positive culture for AFB, a positive Xpert Mycobacterium tuberculosis/RIF or a combination of clinical features and the presence of caseating granulomas.

**RESULTS:** The mean age of Tuberculous lymphadenitis patients is 28.46 years with female/male ratio of 3.16:1. History of pulmonary TB (both present or previous) is uncommon (14%) while history of contact with TB was more common (30%). The symptoms associated with TBLA include Fever (24%), loss of appetite (10%), sweating (6%) and a combination of these symptoms (60%). The commonest lymph node group affected by tuberculosis is the cervical lymph nodes (50%). A combination of clinical features and caseating granulomas was the most common method of diagnosing tuberculous lymphadenitis (52%). Xpert Mycobacterium tuberculosis/RIF was positive in 18 patients (36%). Culture for AFB was positive in 6 patients (12%).

**CONCLUSION:** Cervical lymph nodes is the commonest site of tuberculous lymphadenitis. Female and young age group are commonly affected. Most patients have no history of pulmonary tuberculosis but about one third of them have a history of contact with tuberculosis.

**Key words:** Tuberculous lymphadenitis, Baghdad.

## INTRODUCTION

Tuberculosis (TB) remains a major global public health problem. In 2019, World Health Organization (WHO) has estimated that 10.0 million people developed TB.<sup>1</sup> TB can be broadly divided into two types: pulmonary TB

and extrapulmonary TB (EPTB). Most efforts are expended for managing pulmonary TB, as it is a major public health concern. Nevertheless, EPTB should not be overlooked. A recent World Health Organization (WHO) report has

<sup>1</sup> CABM, FIBMS, FRCP. Consultant pulmonologist & Internist, the National Tuberculosis Institute, Baghdad, Iraq.

<sup>2</sup> MBChB, FIBMS (respiratory medicine), FRCP (London). College of Medicine, University of Baghdad, Baghdad, Iraq.

<sup>3</sup> MBChB, FIBMS. College of medicine, University of Misan, Iraq.

<sup>4</sup> MBChB. Physician, the National Tuberculosis Institute, Baghdad, Iraq.

<sup>5,6</sup> MBChB. Pulmonologist, the National Tuberculosis Institute, Baghdad, Iraq.

**Corresponding Author:** Abdulla Al-farttoosi, College of Medicine, University of Baghdad, Baghdad, Iraq. E mail: abdulla\_far2000@yahoo.com.



stated that as much as 15% of all TB cases are due to EPTB.<sup>1,2</sup> EPTB can affect the lymph nodes, nervous system, joints, genitourinary tract, bones, gastrointestinal system, and other organs. It can be associated with concomitant pulmonary TB infection or present on its own.

Tuberculous lymphadenitis (TBLA) is one of the most common types of EPTB in many countries, for example it accounts for about 10% of tuberculosis cases in the United States and is often diagnosed very late, and the diagnosis requires a high index of suspicion. TBLA is typically found in the cervical region, and usually presented with a unilateral and painless swelling.<sup>3</sup> Epidemiological studies have shown that tuberculous lymphadenitis is more common among women than men in about 1.4:11 a pattern that is different from that of pulmonary tuberculosis, for which the disease is more common among men. In about 85 %, patients present with a 1–2 months history of a slowly progressive painless unilateral swelling of a 1-3 nodes.<sup>4-6</sup> Cervical chain lymph node is involved in 45%–70%, with 12%–26% in the supraclavicular region. A draining sinus may be present in 4%–11% of cases. Fever, weight loss and other systemic symptoms are reported more frequently in HIV-positive patients than in HIV-negative patients. Concomitant pulmonary tuberculosis is reported in 18%–42% of the patients.<sup>7-9</sup>

Tuberculous lymphadenitis (TBLA) is diagnosed either by cytology examination of a fine needle aspiration (FNA) specimen or histopathology of an excision biopsy specimen, together with culture. New modalities have been researched for overcoming the issue of long waiting time for the results, and molecular techniques have been developed. The most promising test is the Xpert Mycobacterium tuberculosis/RIF, which has a high sensitivity and specificity. An ideal diagnostic method should include the combination of relevant patient history, clinical examination, and laboratory and radiological testing to avoid delays in treatment, misdiagnosis, and further complica-

tions.<sup>10,11</sup>

This study was design to identify the clinico-demographic features of patients diagnosed with tuberculous lymphadenitis at the National TB institute in Baghdad.

## METHODS

**Setting and Design:** A case series study was done at the national TB institute in Baghdad from January 2020 till June 2020. All patients were referred to the national TB institute from other hospitals in Baghdad City by their treating physicians on clinical suspicion of TBLA.

**Ethical consideration:** The study was approved by the ethical research committee of public health department in Baghdad in accordance with the regulations of Iraqi Ministry of Health. Data of all patients were kept confidential and only used for the purpose of this study.

**Definition of the cases and exclusion criteria:** We included all patients whom diagnosed as tuberculous lymphadenitis during the studied period at the National TB institute. The diagnosis of TB lymphadenitis was confirmed either by a positive culture for AFB, a positive Xpert Mycobacterium tuberculosis/RIF or a combination of clinical features and the presence of caseating granulomas. None of the patient were excluded from the study.

**Sampling:** All patients fulfilled inclusion criteria who were diagnosed as tuberculous lymphadenitis during the study period were included in the study.

**Outcomes and Procedure:** Demographic data were collected including name, age, gender, BMI and address. Clinical data included associated symptoms, co-morbidities, site of lymph nodes involved with TB, the presence of discharge, method of diagnosis of TB lymphadenitis, associated pulmonary involvement, personal history of TB or contact with TB, history of BCG vaccination and drug history. Cytology and histopathology were performed at the Medical City Teaching Laboratory by an experienced histopathologist. Culture, AFB and Xpert Mycobacterium tuberculosis/RIF test

**Table 1** | Patients demographic distribution of the study (n=50).

Characteristics Features	No.	%
<b>Age (years)</b>		
Mean±SD	28.46±15.38	
(Median)	(24.5)	
Age group		
0-10	5	10
11-20	14	28
21-30	14	28
31-40	7	14
41-50	4	8
51-60	4	8
>60	2	4
Total	50	
<b>Gender</b>		
Male	12	24
Female	38	76
<b>BMI (m2/Kg)</b>		
Mean±SD	26.14±2.8	
(Median)	26	
Underweight (<18.5)	0	0
Normal (18.6-24.9)	16	32
Overweight (25-29.9)	26	52
Obesity (≥30)	8	16
<b>Residence</b>		
Urban	43	86
Rural	7	14

**Table 2** | Clinical features of tuberculous lymphadenitis patients.

Variables	No.	%
<b>Associated with current pulmonary tuberculosis</b>		
Yes	3	6
No	47	94
<b>Associated symptoms</b>		
Fever >3 weeks	12	24
Loss of appetite	5	10
Sweating	3	6
Combination of the above symptoms	30	60
<b>History of chronic diseases(diabetes meletus, hypertension)</b>		
Yes	8	16
No	42	84
<b>History of drugs for chronic diseases</b>		
Yes	6	12
No	44	88
<b>History of previous TB</b>		
Yes	4	8
No	46	92
<b>History of TB contact</b>		
Yes	15	30
No	35	70
<b>History of BCG</b>		
Yes	47	94
No	3	6

were done at the Reference Laboratory of the national TB institute.

**Statistical analysis:** Descriptive statistics presented as mean, standard deviation, median, frequencies and percentages.

## RESULTS

A total of 50 cases of Tuberculous lymph adenitis (TBLA) were identified during the study period. The mean age was 28.46 years, ranging from 8 to 70 years. Most patients were in the age groups 11-20 years (n=14,28%),21-30 years (n=14,28%) and 31-40 years (n=7,14%). The female/male ratio was 3.16:1. None of the patients is underweight, with mean of BMI is 26.14 kg/m2. The majority of patients resided in the urban area of Baghdad (Table 1).

Table 2 shows that the association of TBLA with concomitant pulmonary tuberculosis is very uncommon occurring in only 3 patients

(6%). Similarly, the history of previous Tuberculosis was also uncommon (n=4, 8%). However, the history of contact with TB was more common (n=15, 30%). The symptoms associated with TBLA include Fever (n=12,24%), loss of appetite (n=5,10%), sweating (n=3,6%) and a combination of these symptoms (n=30,60%). Most patients (n=47,94%) have history of BCG vaccination. The majority of patients have no history of chronic diseases or history of drugs for chronic diseases.

The commonest lymph node group affected by tuberculosis was the cervical lymph nodes(n==25,50%). The other groups of nodes affected by TB include axillary (n=20,40%), inguinal (n=3,6%) and submandibular (n=2,4%). Nine patients (18%) had discharge from the affected lymph nodes. A combination of clinical features and caseating granulomas was the most common method of diagnosing TBLA (26 patient,52%). Xpert Mycobacterium tuberculosis/RIF was positive in 18 patients (36%). Cul-

**Table 3** | characteristics of Tuberculous lymphadenitis of this study (n=50).

Variables	No.	%
<b>Sites of involvement</b>		
Cervical	25	50
Axillary	20	40
Inguinal	3	6
Submandibular	2	4
<b>Discharge</b>		
Yes	9	18
No	41	82
<b>Methods of diagnosis</b>		
A combination of clinical features and caseating granulomas	26	52
Xpert Mycobacterium tuberculosis/RIF	18	36
Culture for AFB	6	12

ture for acid fast positive (AFB) was positive in 6 patients (12%) (Table 3).

## DISCUSSION

Tuberculosis is still a significant health problem in Iraq with annual incidence of 41 cases per 100000 of the population according to WHO global TB Report 2020.<sup>1</sup> TBLA was the 2<sup>nd</sup> most common site of extrapulmonary TB in Iraq according to a study in 2012.<sup>12</sup>

Like what we found in our study, many studies have shown that TBLA is more common among young adults.<sup>13-16</sup> We found that women is commonly affected by TBLA than men; a result which is similar to that reported by many studies. However, in our study the female/male ratio is much higher, 3.16:1. In a study conducted in Baghdad in 2019, Jasim et al has found that female / male ratio was 2.5:1,<sup>13</sup> and in India, Purohit et al reported that a female to male ratio was 2.1:1.<sup>16</sup> Weight loss was a significant clinical feature of TBLA though of variable percentages; Purohit<sup>16</sup> found it in 23%, while Huda<sup>15</sup> found it in 64% of patients. In contrast to these studies, 68% of our patients were either overweight or obese and none of them was underweight.

Most patients in this study reside in urban area of Baghdad and has no history of contacts with animal. This because the study has conducted in urban areas of Baghdad, and the results might be changed if we included rural areas of Baghdad and other provinces. Many

studies have shown that TBLA is more in rural areas and patients have more contact with animals; Abebe et al<sup>17</sup> in Ethiopia found that the majority of their patients reside in rural areas or had a history of contacts with animals, similarly Purohit et al<sup>16</sup> in India have shown that 60% of patients reside in rural areas.

The most common associated symptoms were the combination of constitutional symptoms in 60%, while fever was in 24%, loss of appetite in 10%, sweating in 6%. Only a minority of our patients have a chronic disease or a treatment for such disease. Both of these findings are in line with that of most other studies.<sup>15-17</sup> but it is differing from that of Jasim et al in Baghdad where Constitutional symptoms were uncommon.<sup>13</sup>

Regarding history of tuberculosis in our patients, 6% have concomitant pulmonary disease, 8% have previous history of pulmonary tuberculosis and 30% have history of contact with tuberculosis. These findings are different from that of many studies which reported concomitant pulmonary tuberculosis in 18%–42% of patients,<sup>7-9</sup> and also different from that of Purohit et al in India where only 10% of patients had history of contact with tuberculosis and none of them had concomitant tuberculosis.<sup>16</sup> The vast majority of patients (94%) had BCG vaccine which is significantly different from the findings of a large systematic review and meta-analysis done by Mekonnen et al where only (24%) of patients had BCG vaccination scar.<sup>14</sup> The difference reflects the effective BCG vaccination program at birth in Iraq.

Cervical lymph nodes were found to be the commonest affected site (50%), followed by axillary (40%) and inguinal (6%). These findings are consistent with that of Jasim et al<sup>8</sup> in Baghdad, Khan FY in Qatar,<sup>13</sup> Huda et al<sup>15</sup> in Bangladesh and Purohit et al<sup>16</sup> in India. This may be explained by very rich lymphatics of the neck and close anatomical proximity to lungs. The presence of discharge from the affected lymph nodes was found in 18% of our series which was very high comparing to that reported by Jasim and Purohit which was only in 1-2% of their patients.<sup>13,16</sup> High frequency of discharge in our patients may be due to the late presentation of the patients, delay in the diagnosis, and strong immune response as most of them have no associated chronic diseases.

Our study demonstrates that finding of caseating granuloma, lymphoid cell infiltration, or Langerhans giant cell with necrosis on histopathological examination is still the main and the most practical tool for the diagnosis of TBLA in Iraq; found in 52% of our patients. Disadvantages of this procedure are the need for surgery, for more time to obtain the sample, and its high costs. Culture for AFB, which usually needs 2-4 weeks to obtain the result, was positive in only 12% of patients in this study. However, the study shows the evolving role of Xpert Mycobacterium tuberculosis/RIF as a rapid and highly specific test that can reach the diagnosis of all types of tuberculosis including TBLA in less than 2 hours (was positive in 36% of our patients). Therefore, the implementation of the Xpert Mycobacterium tuberculosis/RIF assay may dramatically improve the diagnosis of TBLA. These findings represent significant difference from that of Jasim et al in their 2019 study in Baghdad on 188 patients with TBLA. Although they used the histopathological findings to reach the diagnosis in 74% of patients, they never used Xpert Mycobacterium tuberculosis/RIF assay in any of their patients.<sup>13</sup> The possible explanation for this may be that most of clinician in Iraq may expect Xpert Mycobacterium tuberculosis/RIF assay is not accessible, although the test is available in the chest and respiratory diseases units in all governorates of Iraq for the last 8-10 years.

## CONCLUSION

Tuberculous lymphadenitis is still reported at the National TB institute. Female and young age are commonly affected, most patients are in a good health state and reside in urban area. The majority of patients have reported constitutional symptoms without a concomitant pulmonary TB; however, a third of them had a history of contact with a patient with tuberculosis. Cervical lymph nodes are the most commonly site of involvement. Most of the patients were diagnosed by presence of caseating granuloma in combination with clinical feature, while a third of them was diagnosed by Xpert Mycobacterium tuberculosis/RIF technique.

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**Abbreviations list:** Acid fast positive (AFB), Bacillus Calmette-Guérin (BCG), Body Mass Index (BMI), Extrapulmonary Tuberculosis (EPTB), Fine needle aspiration (FNA), Rifampicin (RIF), Tuberculosis (TB), Tuberculous lymphadenitis (TBLA), World Health Organization (WHO).

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