

## LYMPH NODE TUBERCULOSIS

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### ABSTRACT

**Objective:** To find the frequency of tuberculosis in the lymph nodes in relationship to extrapulmonary tuberculosis and study the role of demographic factors like sex and age in the etiology of tuberculous lymphadenitis.

**Material and Methods:** A total of 525 cases of extrapulmonary tuberculosis diagnosed in histopathology section of The Department of Pathology, Lady Reading Hospital, Peshawar in the years 2002-2005 were included in the study.

**Results:** Out of all the extrapulmonary tuberculosis cases, 66% revealed tuberculous lymphadenitis. Seventy one percent of the patients were females in their reproductive age.

**Conclusion:** Tuberculous lymphadenitis, after pulmonary tuberculosis, it is the second most common site of tuberculosis, mainly affecting females in their reproductive age.

**Key words:** Tuberculosis, lymph node tuberculosis, tuberculous lymphadenitis.

### INTRODUCTION

Tuberculosis (TB) is a global infection. Each year, about 8.8 million people contract tuberculosis and nearly 1.6 million are killed by it<sup>1</sup>. The lethal alliance of HIV and tuberculosis, and the emergence of multidrug-resistant M. tuberculosis have further added to the gravity of the problem.<sup>2,3,4</sup>

The incidence of tuberculosis in a population is directly related to its socioeconomic and hygienic conditions. Apart from the current rise in the incidence of tuberculosis in the affluent West due to AIDS<sup>5</sup>, tuberculosis is generally associated with poor living conditions, having a high prevalence in the Third World.<sup>4,6,7</sup> Nearly 44% of the population of the Southeast Asia is reported to be infected by M. tuberculosis.<sup>8</sup>

Tuberculosis occurs in both sexes in any age and can involve any organ/tissue of the body.<sup>9</sup> It can be pulmonary when occurring in lungs or extrapulmonary when occurring outside the lungs. Extrapulmonary Tuberculosis (EPTB) is on the increase world over<sup>10</sup>. In many parts of the world, Lymph Node Tuberculosis (LNTB) is the most common form of EPTB. According to a French study, after lungs, lymph node is the second most

common site of tuberculosis, representing 40% of EPTB cases.<sup>11</sup> Some local studies have shown high frequency of tuberculosis in peripheral lymphadenopathy cases.<sup>12,13</sup> However, to our knowledge, no study has been conducted in NWFP regarding the situation of LNTB in relation to EPTB. Keeping in view the rising trend in the incidence of EPTB world over and the non-availability of data on its various aspects in NWFP, the present study was conducted for two purposes:

1. To determine the relative frequency of LNTB in relation to EPTB.
2. To study the role of demographic factors like age and sex in the etiology of LNTB.

### MATERIAL AND METHODS

All the cases diagnosed as extrapulmonary tuberculosis in The Pathology Department, Lady Reading Hospital Peshawar in the years 2002-2005 were included in the study. Such cases were 525 in number. Age, sex and site of biopsy were recorded. The specimens were received and preserved in 10% formalin, processed in routine manner and embedded in paraffin wax. Three-micron thick sections were cut and stained by Hematoxylin and Eosin<sup>14</sup>. The diagnosis was

### SITE DISTRIBUTION OF EPTB: BOTH SEXES

System involved	Number of Cases	Percentage
Lymph Nodes	349	66
Other Sites	176	34
Total	525	100

Table 1

undertaken on morphological grounds. Tissues containing caseating epithelioid cell granulomas were identified as tuberculosis. The slides were reviewed by two histopathologists.

### RESULTS

Out of 525 cases of EPTB, tuberculous lymphadenitis was seen in 349(66 %) cases (Table 1). The age ranged from 1-80 years. The mean age for lymphadenitis was 27 years. The number of male patients was 102 and that of female patients 247(Table 2). Male:Female ratio was 1:2.4. Of all the cases, 68 % were in 16-45 years of age (Table 3). The most common site involved was neck which, along with submandibular region, consisted of 61% of the cases (Table 4).

### DISCUSSION

Despite of improvement in the living standard in general, corresponding decrease in the incidence of TB has not occurred. Rather there has been an increase in the incidence of EPTB<sup>10</sup>. Lymph nodes are the second most common site of all TB cases<sup>11</sup> and the most common site among EPTB cases in many parts of the world<sup>15</sup>. So far, little data are available regarding different statistical aspects of EPTB in relation to tuberculous lymphadenitis in NWFP, Pakistan. In our study, 66% of the EPTB cases belonged to lymph nodes. The figure may actually be higher if mediastinal and hilar lymph nodes are included in the study. These lymph nodes are equally involved by the disease<sup>16,17</sup> but are rarely biopsied in our setup for their relatively inaccessible situation. Most studies conducted in this country have evaluated tuberculosis in the lymph nodes as a cause of lymphadenopathy.<sup>18,19</sup> Many studies from India and Bangladesh also showed similar approach.<sup>20,21</sup> Our study evaluated LNTB in relation to EPTB and revealed that more than two third of EPTB cases are found in the lymph nodes. Some studies from other countries also reported similar results.<sup>9,22,23</sup>

The dynamics of such high preferential organ/tissue involvement is unclear. TB research in the recent years indicates that TB is very variable, depending upon the genetics of the infecting TB strain, the ethnic group infected, and the

### LNTB: SEX DISTRIBUTION

Sex	Number of Cases	Percentage
Male	102	29
Female	247	71
Total	349	100

Table 2

environment in which they live<sup>24</sup>. So presently it is difficult to specifically answer to why, in relation to EPTB, pleura is the most common site of involvement in Hong Kong<sup>25</sup>, bone and joints in USA<sup>26</sup> and lymph node in our region? Likely, *M. tuberculosis* has a tropism for phagocytic cells<sup>27</sup> abundantly found in lymph nodes. The other reason for such high frequency may be that tuberculosis of lymph nodes leads to their enlargement which is clinically quite obvious, consequently with early, easy and more frequent diagnosis. Other forms of EPTB may be more difficult to diagnose and many may remain unexplored thus with false low figures.

Male: Female ratio was 1:2.4. This finding is in accordance with several other studies.<sup>20,28</sup> The reason for this high female preponderance is unclear but it is likely that both biological sex differences and sociocultural risk factors related to gender roles make women more vulnerable to the disease. In a male dominated society like that of Pakhtuns and Afghans, the socioeconomic status of woman is even more plaintive. It is a common practice in Pakhtun culture that females generally take their meals after the males have finished. Also, for emotional reasons, mothers would feed their kids first on the expense of their own nutrition. Such differential access to food by females could cause relatively more malnutrition in females as compared to males.<sup>12</sup> Other sociocultural factors could be female illiteracy, economic dependency and their poor access to health care.

In addition to host factors, genetic polymorphism of *M. tuberculosis* may also play important role in the selection of its host with regard to sex and age.<sup>29,30</sup> High female predilection in certain world regions may be a function of some genetic variations of the organism. In a Madagascar-based study, the clustering rate was found to be significantly higher in female patients than in male patients suggesting that Malagasy women were more likely to progress to disease after infection than men<sup>31</sup>. However, this concept has yet to be explored.

Another significant trend noted in our study was that two third of the patients were in the age group 16-45 years of age. A similar trend has

**LNTB: AGE DISTRIBUTION**

Age	Number of Cases	Percentage
Up to 15 Years	71	20
16-45 Years	237	68
Above 45Years	41	12
All	349	100

Table 3

also been noted in a study conducted in Paris<sup>11</sup>.It suggests that endocrine factors might play a role. In a study conducted in 1940, female predominance in TBLN was associated with hormonal changes.<sup>32</sup> Reproductive burden in females associated with pregnancy, labor, abortion and lactation may also be significant. Particularly, early marriages, teen-parenting, multigravidity with less time interval between successive pregnancies and lactational stress may all impair immunity resulting in higher predisposition to tuberculosis. A WHO study demonstrated that females had up to 130% higher risk of progressing from TB infection to disease between the ages of 10 and 44 years.<sup>33</sup> A higher rate of progression from infection to clinical disease among reproductive age women has been reported in some other studies.<sup>34</sup> Also, females in their 2nd and 3rd decades are more conscious to their appearance with relatively higher self-detection rate of the affected lymph nodes.<sup>12</sup>

In males too, LNTB is more frequent in 16-45 years age group. Such tendency in males is difficult to explain. However, biological factors are likely. In the proletariat class, working under poor, unhealthy conditions in this age group may play some role in the pathogenesis of both pulmonary and extrapulmonary tuberculosis including TBLN.

A high frequency of tuberculosis in cervical lymph nodes, as seen in our study, has also been reported by others<sup>11,35</sup>. Since the primary focus of extrapulmonary tuberculosis in most of the cases (with the possible exception of abdominal tuberculosis) is in the lungs, the proximity of cervical lymph nodes to the lungs may possibly account for their more frequent involvement.<sup>36</sup>

**CONCLUSION**

1. Tuberculous lymphadenitis is the most common form of EPTB.
2. In our environments, female gender and age between 16-45 years are two important predisposing factors for LNTB.

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**LNTB: SITE DISTRIBUTION**

Site	Number of Cases	Percentage
Cervical	190	54.4
Axillary	69	19.8
Mesenteric	36	10.3
Submandibular	24	06.9
Supraclavicular	15	04.3
Inguinal	15	04.3
Total	349	100

Table 4

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