

## EXTRA PULMONARY TUBERCULOSIS – A RETROSPECTIVE REVIEW AT A HIGH BURDEN TERTIARY CARE HOSPITAL

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### ABSTRACT

*Background: Tuberculosis is a disease of poor countries and a major public health issue. In the recent years, there has been an increase in the occurrence of extra pulmonary tuberculosis (EPTB) world over. Very little data is available regarding the present situation of EPTB in our country.*

*Objective: To describe the pattern and treatment outcomes of the extra-pulmonary tuberculosis (EPTB) cases in a tertiary care hospital in a high burden tuberculosis country.*

*Methodology: A retrospective study of 1158 cases was conducted at Gulab Devi Chest Hospital (GDH), the largest chest hospital in South East Asia. All cases diagnosed and treated as EPTB (diagnosed on histopathology and culture sensitivity) between January 2012 and December 2012 were included. Data was retrieved from medical records on demographics, clinical, laboratory findings and treatment outcome status.*

*Results: A total of 1158 patients being treated were included in the study. Mean age was 29.7 S.D of  $\pm$  10.6 years. An overall male predominance was observed. Pleura were the most common site of EPTB in our patients following T.B of lymph nodes and bones. 82% of the patient completed their treatment.*

*Conclusion: Our study concludes that Pleura are the most common site of EPTB detected in 47% of our patients followed by T.B of lymph nodes (32%) and bones (11%).*

*Keywords: Public Health, Mycobacteria, Tuberculous pleuritis, Mortality.*

### INTRODUCTION

Mycobacterium tuberculosis has existed in human populations since ancient times; however it was in the seventeenth century that pathological and anatomical descriptions of tuberculosis (TB) began to appear.<sup>1</sup> The clinical manifestations of TB are of two types: Pulmonary and Extrapulmonary forms of TB (EPTB), the former being the commonest.<sup>2</sup> In EPTB highly vascular areas such as lymph nodes, meninges, kidney, spine and growing ends of the bones are commonly affected in response to the spread of mycobacteria in these site. The other sites are pleura, pericardium, peritoneum, liver, gastro-intestinal tract, genitor-urinary tract and skin.<sup>3</sup> In 2007, WHO ranked Pakistan eighth in the list of high burden TB countries globally.<sup>4</sup> In order to address the global threat of TB, the Millennium Development Goals (MDGs) include reducing the prevalence of TB disease and deaths by 50% till 2015.<sup>5</sup> The proportion of EPTB among all TB cases varies from country to country. The extrapulmonary manifestation of TB is prevalent in 10 – 34% of non HIV cases while it occurs in 50 – 70% of patients co-infected with HIV.<sup>6</sup> In Pakistan, WHO estimates that 34,000 (15%) of newly reported cases in 2007 were extra-pulmonary.<sup>7</sup>

Since tuberculosis can virtually involve any organ system so an attempt is made to describe the pattern and treatment outcomes of the extra pulmonary tuberculosis (EPTB) cases in a tertiary care hospital in a high burden tuberculosis country.

### MATERIALS & METHODS

**Design and Setting:** It was a retrospective observational study of 1158 cases carried out in Gulab Devi chest hospital, Lahore between January 2012 and December 2012.

**Sample selection and Data collection:** All cases (registered or referred) diagnosed and treated as EPTB were included in the study. EPTB was defined as TB of organs other than the lungs, such as pleura, lymph nodes, abdomen, genitourinary tract, skin, joints, bones, tubercular meningitis, tuberculoma of the brain etc.<sup>8</sup> Those cases that were having concomitant pulmonary TB or incomplete record were excluded. Data were obtained from medical records, TB 07 (Patient directory software), Lab reports and radiology reports. Information was also obtained regarding clinical findings and treatment outcomes (treatment completed, default, failure, referred). Including basic demographic

details all the data were recorded in a short structured proforma. Because the study was non invasive and did not touch the sensitive barriers of religion and social norms, a formal ethical approval was not taken. Instead a permission from the higher authorities (Medical superintendent) was secured.

**Statistical Analyses:** Statistical analyses were done in Statistical Package for Social Sciences (SPSS) version 16.0. Categorical data were presented as percentages and in form of graphs while descriptive and frequency distribution was used for quantitative analyses.

**RESULTS**

A total of 1158 patients were included in this study. Basic demography of the patients is summarized in Table 1. Mean age and S.D of the patients was 29.7 ± 10.6 years. The overall M:F ratio in this series was 1.3:1 (660 vs. 498). Most common age group that was affected with EPTB was of 14 – 40 years.

Table 2 shows that out of 1158 cases, 545 cases (47%) showed pleural involvement, 369 (32%) showed

**Table 1: Basic Demographic Distribution.**

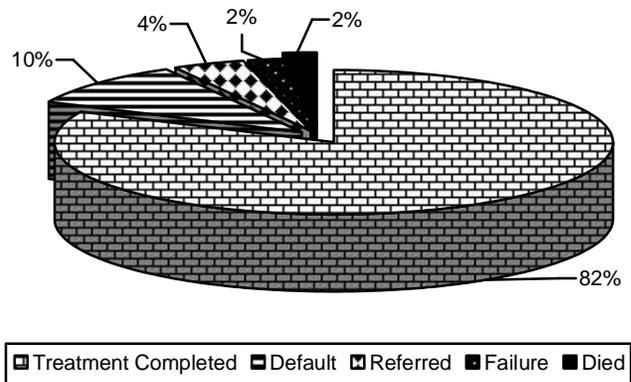
	Frequency (N = 1158)	Percentage
<b>Gender</b>		
Males	660	57%
Females	498	43%
<b>Age Groups</b>		
Below 14 years	162	14%
14 – 40 years	822	71%
More than 40 years	174	43%

**Table 2: Site Distribution of EPTB.**

	Frequency (N = 1158)	Percentage
Pleural	545	47%
Lymph nodes	369	32%
Bones	126	11%
Abdominal	41	3.4%
Pericardial	29	2.5%
Cold Abscess	17	1.5%
TBM (Meninges)	09	0.7%
Chest wall	09	0.7%
Milliary	05	0.43%
Urogenital	04	0.34%
Eye ball	03	0.25%
Skin	01	0.08%

T.B in lymph nodes including cervical lymph nodes (91%), axillary (6%), submandibular (2%) and inguinal (1%). T.B bones were found in 126 (11%) cases out of which spinal T.B (93%), Hip joint (4%), ankle joint (2%) were commonly affected. Abdominal T.B was seen in 41 (3.4%) cases, Pericardial T.B in 29 (2.5%) and cold abscess was observed in only 17 (1.5%) of the cases. In each of the remaining systems, tuberculosis was found only in less than 1% of the cases.

With respect to treatment outcomes a total of 950 (82%) patients completed treatment while 23 (2%) failed to respond. A default rate of 10% was observed in our patients. 23 patients died due to complications (none of these was from the category who failed to respond) while 23 patients were referred to other centers due to unavailability of specialized approaches (Fig. 1).



**Fig. 1: Treatment Outcomes.**

**DISCUSSION**

This was an observational retrospective review of 1158 EPTB patients over a 12 months period at a tertiary care hospital in Lahore. Our study showed an overall male predominance (660 vs. 498) in a M:F ratio of 1.3:1, a ratio contrary with other studies.<sup>9,10</sup> The reason for male preponderance is not clearly understood however increased exposure to unhealthy working conditions in males as compared to females seems to be a possibility. Regarding the frequency of EPTB in different age groups there are differences in various studies.<sup>11,12</sup> Our results are quite similar to the results of previous study carried out in NWFP<sup>13</sup> as they reported 70% of their cases were from 15 – 45 years and 74 cases (14%) were over 45 years of age so as in our study 71% of the cases are in age group 15 – 40 years and the remaining cases are distributed in other age groups.

TB primarily begins in the lung parenchyma or hilar lymph glands and spreads through lymphatics or blood to other body organs. Clinical manifestations depend upon the site and burden of infection and host response. In our study the frequency of EPTB cases by site was highest in Pleura (47%), followed by lymph nodes (32%) and bones (11%). These results were con-

sistent with the study from Hong Kong<sup>14</sup> which also show similar pattern of EPTB cases by site (41% pleura and 36.5% lymph node) whereas in another study in USA<sup>15</sup> bones and joints were the most common sites (27.1% of case patients). Results of our study are contrary to many other studies which reported highest frequency of lymph node involvement<sup>16-18</sup> and we reported Pleura as the most common site of EPTB. Regarding lymph nodes; cervical adenopathy is most common (69%), but axillary, inguinal and submandibular have also been involved in our study same as that of previous study<sup>19</sup> which also reported that cervical lymph nodes were most commonly involved (77%) in their patients. The less number of cases from CNS in our series is due to the fact that many cases of neurotuberculosis, meningitis being the commonest in the category,<sup>20</sup> are generally diagnosed by special methods in Neurosurgical units.<sup>21,22</sup> Also, in some published series, spinal tuberculosis has been included in CNS tuberculosis.<sup>23</sup> But in our series, we have grouped spinal TB with skeletal system. This is done according to the European consensus on surveillance of tuberculosis.<sup>24</sup> Disagreement in different studies regarding variations in the frequency of EPTB in different anatomic sites is difficult to explain. However, these differences suggest that the dynamics of EPTB epidemiology may be specific to geographic location and population; more population based studies in different geographic regions are needed. Cure rates strictly denote bacteriologic cure which is difficult to assess in EPTB. A total of 950 patients completed treatment while 23 failed to respond. Possible reasons for failure were missed diagnosis of drug resistance, non tuberculous mycobacteria, and late diagnosis of patients. A close relationship between patient and physician generally ensures continuity of care and good adherence to treatment. This practice was adhered to in principle at the study center, visits were regular and adverse events were monitored. Despite this a default rate of 10% (116 patients), considered flimsily high, was mainly due to long distance travel. Many patients had to travel from remote and difficult to access places. Finally, since there seems to be no consensus on length of treatment of EPTB in various sites, it is recommended to conduct large scale studies to determine effective duration of treatment of EPTB.

Our study **concludes** that Pleura was the most common site of EPTB in our patients followed by T.B of lymph nodes and bones. Most of our patients completed their treatment depending upon their compliance and accessibility.

#### AUTHOR'S CONTRIBUTION

All authors contributed equally in the preparation and designing of manuscript.

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