*Original Article*

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# Histopathological Study of Extapulmonary Tuberculosis: 2 Year Study

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**Abstract**

*Introduction:* Tuberculosis is an age old disease and India has the highest disease burden. With the rise in HIV cases, the incidence of extrapulmonary tuberculosis has further increased. Both TB and EPTB remains a major health problem.

*Aim:* To study the histopathological spectrum of EPTB with respect to its site, age and sex distribution.

*Material and Methods:* This study is a retrospective study carried over a period of two years. We included 86 cases of EPTB from the departmental registry. The clinical details and the histopathological findings were noted.

*Results:* We studied 86 cases of EPTB. Male: female ratio being 0.75. The most common age group was 21-30 years, followed by 31-40 years. Majority of cases involved the lymphoreticular system and the soft tissue. Rare sites included tonsil, thyroid, liver and kidney.

*Conclusion:* Incidence of EPTB is on the rise as it mimics various other disease processes and may account for disease burden. Knowledge of the various EPTB sites in essential and should be kept as a differential diagnosis in histopathological reporting.

**Keywords:** Tuberculosis; Extrapulmonary; Infection; Histopathology.

## Introduction

TB is an infectious disease which ranks among the top 10 causes of death. It is caused by the bacillus Mycobacterium tuberculosis. Globally, 10.0 million people were estimated to have developed TB disease in 2017.[1] India has the highest incidence of tuberculosis with 8.6 million new cases diagnosed every year.[2]

Tuberculosis is not just a disease of the lungs but can involve any organ system. Extrapulmonary Tuberculosis (EPTB) is defined as the isolated occurrence of TB in any part of the body other than lungs.[3] Extrapulmonary tuberculosis constitutes 10–50% of all tuberculosis in HIV negative patients and 35– 80% in HIV infected patients.[4]

EPTB involvement is higher in immuno compromised individuals. The diagnosis of EPTB is more difficult than that of PTB because of its varied clinical presentation.[4] Diagnosis of EPTB is important because there in an increase in its incidence which leads to severe sequelae due to the delayed diagnosis leading to higher disease burden and morbidity in the population.

Tuberculous lymphadenitis remains the commonest form of extrapulmonary lymphadenitis. Despite the decrease in new cases of active tuberculosis, number of EPTB cases has remained constant. This might be due to a delay in recognition, and also a lack of consideration of tuberculosis when the presenting symptoms are other than respiratory.

Histopathology remains one of the simplest and important methods for diagnosing tuberculosis.

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Histopathological diagnosis can help in arresting disease progression and development of MDR TB and spread of infection thus reducing the disease burden.[4]

## Materials and Methods

This is a retrospective study carried out in the department of pathology at Khaja Bandanawaz Institute of Medical sciences, Kalaburagi. After obtaining ethical clearance from the institutional ethical committee for conducting this study. The departmental registry was reviewed and all the cases of tuberculosis involving sites other than lungs were recorded.

A total of 86 cases of extrapulmonary tuberculosis were diagnosed in the department over a period of 2 years and that were included in the study.

The clinical details of the patients sent for histopathological analysis were obtained from the departmental registry. Gross and microscopic features of all the cases were reviewed. Representive tissue section were processed using routine hematoxylin and eosin staining and reviewed for microscopic features of tuberculosis.

## Results

We studied a total of 86 cases. Out of which 49 (57%) were female and 37 (43%) were male. Male: female ratio being 0.75. The most common age group was 21–30 years, followed by 31–40 years.(Table 1)

**Table 1:** Age incidence of the cases of extrapulmonary TB.

| Age group | Number of cases |
|---|---|
| 1–10 | 4 |
| 11–20 | 12 |
| 21–30 | 33 |
| 31–40 | 21 |
| 41–50 | 7 |
| 51–60 | 5 |
| >60 | 4 |

Out of 86 cases of extrapulmonary tuberculosis, majority of the cases were seen involving the lymphoreticular system (17.4%), with lymph node in 13 cases and tonsils were involved in 2 cases.

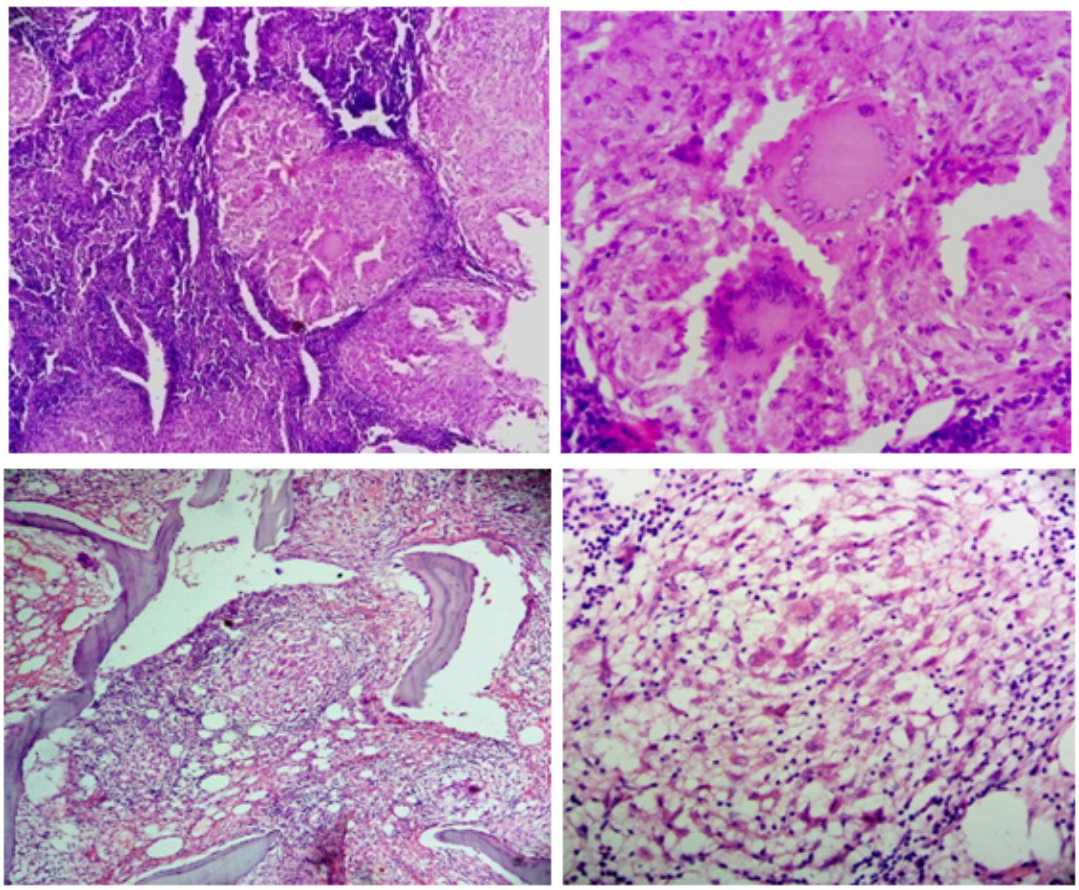

**Fig. 1:** Microscopic picture showing (a & b) Tuberculosis of the lymph node showing typicalepitheloid cell granuloma with langhans giant cell.(c & d) tubercular granuloma in a section from TB osteomyelitis.

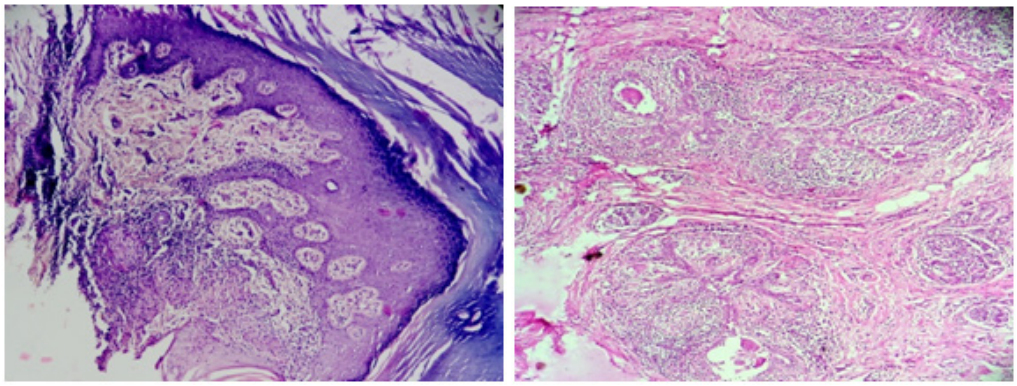

**Fig. 2:** Microscopic picture epithelioid granuloma in (a) tubercular invlolvement of skin and (b) breast tuberculosis.

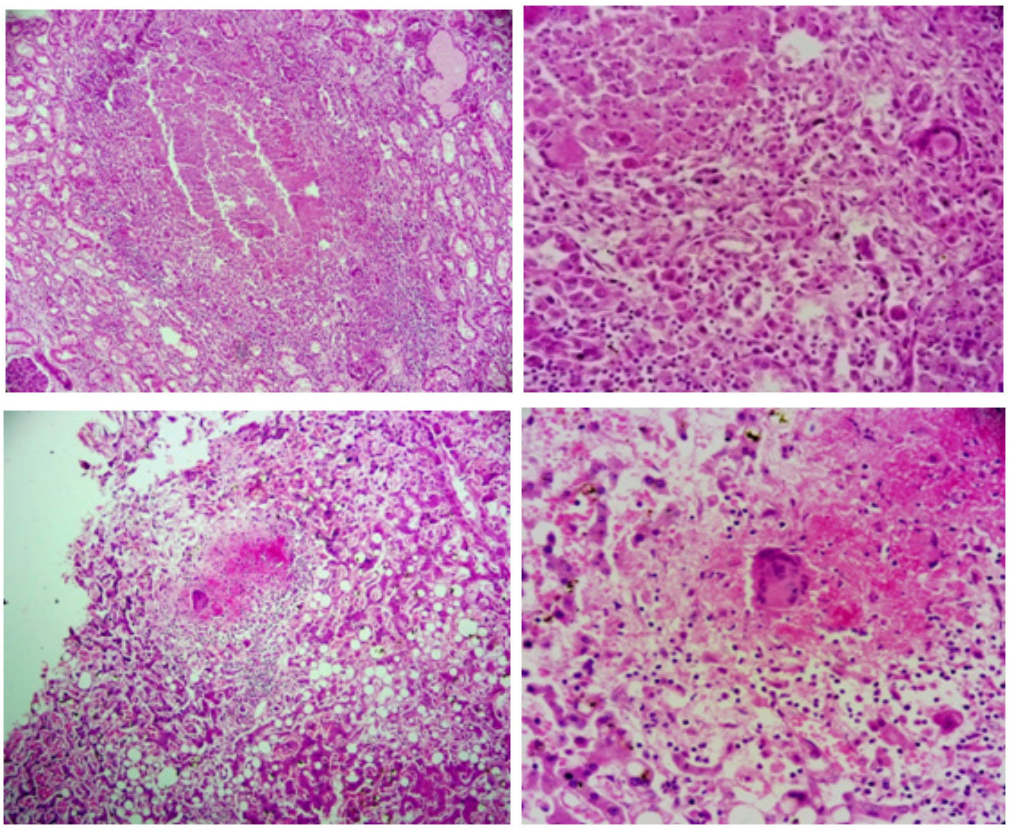

**Fig. 3:** Microscopic picture of (a)(b) caseating epithelioid cell granuloma involving the kidney.(c)(d) section from liver showing caseating granuloma in liver.

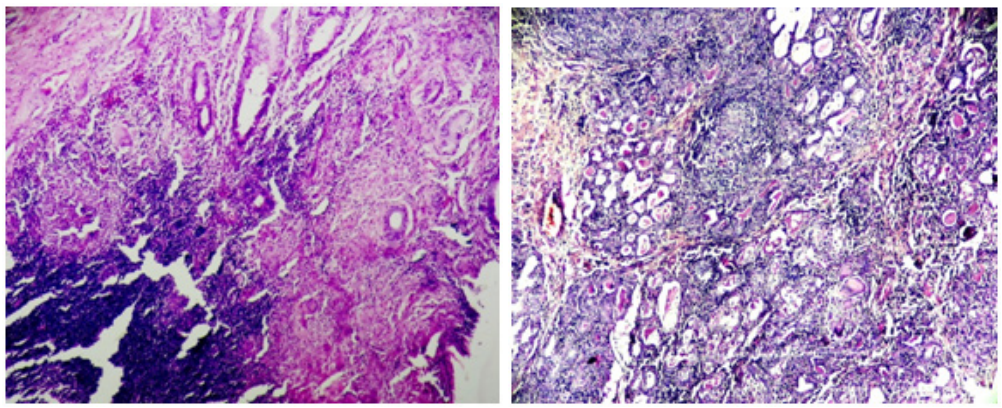

**Fig. 4:** Microscopic picture showing granulomas in (a) endometrium (b) thyroid.

Second commonest site to get involved in our study was soft tissue, with a total of 14 cases (16.2%). Musculoskeletal system was the 3rd most common site to be affected by tuberculosis. We found 11 cases of TB involving bones and joints accounting to 12.7% of the cases, in which 1 case was diagnosed as tubercular synoviitis.

There were 9 cases of appendicular involvement of tuberculosis accounting to 10.4%, followed by 8 cases (9.3%) involving skin. The various forms of cutaneous TB were tuberculosis verrucosa cutis, lupus vulgaris and necrotising granulomatous lesion. We found 7 cases (8%) of tuberculosis in the breast. (Table 2)

**Table 2:** Site wise distribution of the cases of extrapulmonary tuberculosis.

| | |
|---|---|
| Lymhoreticular | 20(23.2%) |
| Soft tissue | 14 (16.2%) |
| Musculoskeletal | 11 (12.7%) |
| Git | 9 (10.4%) |
| Skin | 8 (9.3%) |
| Breast | 7 (8%) |
| Urinary system | 5 (5.8%) |
| FGT | 5 (5.8%) |
| MGT | Prostate 2 |
| | Testes 1 (3.4%) |
| Peritoneum | 2(2.3%) |
| Liver | 1 (1%) |
| Thyroid | 1 (1%) |

There were 5 cases involving the urinary system. 2 of which were seen in the kidney and 3 cases involved bladder presenting with urinary retention.

Tuberculosis of female genital tract was noted in 5 cases out of which 4 cases of TB endometritis and 1 case of TB salphingitis were seen. Male genital tract was involved in 3 cases, of which 2 were diagnosed as TB prostatitis and 1 case of testicular TB was seen. We found 2 cases of TB peritonitis and 1 case each of tuberculosis of the liver and thyroid was noted.

## Discussion

TB is an infectious disease caused by Mycobacterium tuberculosis which is an acid fast bacillus. It typically involves the lungs, but can also involve other sites.[1] The commonest route of infection is through inhalation, and the predominant form being pulmonary tuberculosis. Tuberculosis remains an endemic disease and is the seventh leading cause of death globally.[5]

Extrapulmonary Tuberculosis (EPTB) is defined as the isolated occurrence of TB in any part of the body other than lungs.[3] The various EPTB sites reported the world over are lymphatic, pleural, skeletal, central nervous system, skin, ocular, pancreatic, genitourinary and cerebral tuberculosis. Diagnosing EPTB is crucial because it can involve a variety of sites and may mimic various other disease processes.

We studied a total of 86 cases of extrapulmonary tuberculosis. Out of which 49 (57%) were female and 37 (43%) were male. Male: female ratio being 0.75. This was similar to findings in other studies.[3,4] The most common age group was 21–30 years, followed by 31–40 years similar to Bisht et al.[2]

The highest numbers of cases were seen in the lymphoreticular system, with lymph node TB in 18 cases accounting to 20.9% of the cases. In a study done by Guler SA et al Tb of Lymph node was found in 12% of the cases, while Al-Otaibi Fet al found lymph nodal involvement to be as high as 42%.[6,7] however our results were in agreement with the results found in study conducted by Bisht et al who found it in 19.42%.[2] We also found 2 cases of tuberculosis involving the tonsils. In developing countries, tuberculosis amounts to 30–52% of diseases causing lymphadenopathy. Tuberculosis of the tonsils is rare and commonly presents with sore throat and cervical lymphadenopathy.[8]

In our study there were 14 cases involving the soft tissues, accounting to 16.2% of the cases. These cases involved sinus tracts, fistulous tracts, swelling on the back, chest swelling and thigh swelling.

Bone and joint tuberculosis accounts for approximately10% of all EPTB cases, and 50% of those cases have vertebral tuberculosis.[9] Bone and joint tuberculosis were seen in 11 cases (12.7%) in our study. In studies by Ilgazli et al[9] and Gonzalez OY et al,[10] bone and joint Tb was found in 3.6%and 7% respectively. Whereas Bisht et al found it in 16.5% of the cases which is comparable to our study.[2]

In this study tuberculosis of the gastrointestinal system was diagnosed in 9 (10.4%) cases. In a study conducted by Gonzalez et al git was involved in 2% of the cases.[10] While Ilgazli et al found it in 2.8% of the cases.[9] It is hypothesised that these cases occurred due to endogenous reactivation of dormant bacilli in primary infection.[9]

Gastrointestinal tract is one of the most frequent sites of extrapulmonary involvement in tuberculosis.[11]

Although cutaneous TB is rare in Western countries, it remains a significant problem in high-prevalence countries.[12] Cutaneous TB can occur

either as an exogenous infection, when bacilli from a patient with active pulmonary TB enter the skin tissue through small lesions, or endogenous infection caused by reactivation of latent TB infection.[13]

In our study skin involvement was seen in 8 cases (9.3%). In a study by Bisht et al, it was seen in 24.2%[2] whereas the incidence was lower in studies by Kaur et al[3] and Ilgazli et al[9] who found it in 0.5% and 1.9% respectively.

In this study tuberculosis of the breast was seen in 7 (8%) cases. This was higher than the incidence found in studies conducted by Bisht et al and Chandir s et al, who found it in 2.9% in and 1.6%respectively.[2,3]

Urinary system was involved in 5 (5.8%) cases which was higher than the study conducted by Gonzalez OY et al who reported it in 2% in his study.[10]

Genital tuberculosis is reported in only 0.2 to 2% of all gynaecological cases out of which only 1-2% involve the external genitalia.[14,15] Female genital tract tuberculosis was also seen in 5 cases (5.8%) in which 3 cases were seen in endometrium and 2 cases in the fallopian tube. Male genital organs were involved in 3 cases (3.4%) of which 2 cases were found to be involving prostate and 1 case in the testis. It was seen in 1.9% of cases in study conducted by Mithila et al.[2]

Peritoneum was involved in 2 cases. This was in agreement with the study conducted by Guler SA et al[6] who found it in 1.1%. Tuberculous peritonitis is most often seen in disseminated tuberculosis. Occasionally, the bacilli can spread through the wall of infected bowel, or from mesenteric nodes.

In the present study tuberculosis involved the liver in 1 case, similar to findings in a study conducted by Gonzalez et al.[10]

We also found one case of extrapulmonary TB involving the thyroid.

## Conclusion

Incidence of EPTB is on the rise as it mimics various other disease processes and may account for disease burden. Knowledge of the various EPTB sites is essential in early diagnosis and treatment of TB to arrest the spread of infection and counter the menace of drug resistant TB. Early diagnosis also helps reduce the morbidity and bring down the disease prevalence if treatment regimen is followed. EPTB should be kept as a differential diagnosis in histopathological reporting.

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