

Research Article

Site predilection of extrapulmonary tuberculosis: study from a tertiary care centre

Rajani Mavila*, Manoj Kottarath, Smitha Nair, Milan Malik Thaha

Department of Respiratory medicine, Pariyaram Medical College, Kannur, Kerala, India

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*Correspondence:

Dr. Rajani Mavila,

E-mail: sajeevanrajani@gmail.com

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ABSTRACT

Background: Extrapulmonary tuberculosis (EPTB) still constitutes an important clinical problem. We aimed to evaluate the site prevalence of extrapulmonary tuberculosis.

Methods: We retrospectively evaluated 187 extrapulmonary tuberculosis patients diagnosed between 1st June 2013 and 31st May 2015 in a tertiary care hospital, Kanpur, Kerala, India.

Results: Among the extra pulmonary tuberculosis 112 (59.9%) were males. About 170 (90.9%) patients received CAT1 treatment and 17 (9%) patients received CAT2 treatment. Overall, the total number of different types of EPTB cases included Lymph node (n=55, 29.41%), GIT (n=45, 24.04%), Pleura (n=44, 23.53%), Skeletal (n=14, 7.49%), CNS (n=7, 3.74%) EPTB cases other site included mainly genitourinary (6), breast (6), skin (5), pericardium (3), Psoas (4) a vocal cord (1) and eye (1).

Conclusions: EPTB still constitutes an important clinical problem. In the current study, we assessed the site of predilection of EPTB patients. In this study, EPTB cases constituted 52.08% of all tuberculosis cases presented to our center in the study period. Lymph node tuberculosis is the most common type.

Keywords: Extra pulmonary tuberculosis, Lymph node, Gastro intestinal, Breast, Pericardium

INTRODUCTION

Tuberculosis can involve any organ system in the body. While pulmonary tuberculosis is the most common presentation, extrapulmonary tuberculosis (EPTB) is also an important clinical problem.¹⁻³ In India, EPTB comprises 20% of all TB cases.⁴ Its prevalence in the country varies between 8.3-13.1% in different districts according to cohort analysis by Central TB Division, Ministry of Health & Family Welfare in 2002.⁵ In the year 2006, 1,83,180 EPTB cases were registered in comparison to 5,55,660 smear positive pulmonary TB cases giving a ratio of 1:0.3.⁶ Cure of infectious cases is likely to have resulted in a relative rise of annual EPTB case detection.⁷ Prevalence of EPTB has also been found to be higher in pediatric cases.⁸ The term EPTB has been used to describe isolated occurrence of tuberculosis at

body sites other than the lung. However, when an extrapulmonary focuses evident in a patient with pulmonary tuberculosis, such patients have been categorized under pulmonary tuberculosis as per the guidelines of the World Health Organization (WHO).⁹ The percentage of patients with EPTB in tertiary care centres in India was between 30% and 53%.¹⁰ Recent studies have suggested that the sites of EPTB may vary according to geographic location, population groups and a wide variety of host factors.¹¹⁻¹⁴ Diagnosis of EPTB is not covered by RNTCP; and for treatment these cases are forwarded to the DOTS regimen. Tertiary care centres appear to be an excellent place for medical education and operational research in this regard. This is much needed, as HIV-TB co-infection; multi-drug-resistant TB and EPTB continue to be major public health threats even in the era of DOTS.¹⁵ The most common sites of

extrapulmonary involvement were the pleura, followed by the lymph nodes *Mycobacterium tuberculosis* is presumed to spread in sequence from primary lung site to various organs and tissues of the body.¹⁶ Therefore, tuberculosis can cause disease in all organs and mimic various diseases of these organs.^{17,18}

Main aim of our study was to assess the site predilection of extra pulmonary tuberculosis.

METHODS

Study design

The study was done at Pariyaram Medical College, Kannur, Kerala, India. A retrospective analysis of data of patients with EPTB registered for treatment under DOTS for the period of 1 June 2013 to 31 May 2015 was carried out. The sources of information were the TB register and patient record sheets. A patient diagnosed with both pulmonary and extrapulmonary TB was classified as pulmonary TB and was excluded from the study. Extrapulmonary TB is defined as TB of any organ other than the lungs, such as the pleura (TB pleurisy), peripheral lymph nodes, intestines, genitourinary tract, skin, joints and bones, meninges of the brain, etc. Investigations included fine needle aspiration cytology (FNAC) for lymph node, FNAC and biopsy & histopathology for skin, genitourinary and breast, and gastrointestinal tuberculosis, X-ray for bone tuberculosis, synovial biopsy for joint tuberculosis, Cerebro-spinal fluid CSF cytology and biochemistry for tuberculous meningitis, contrast-enhanced computed tomography (CT) or magnetic resonance imaging (MRI) of brain, MRI of spine, chest skiagram and pleural fluid study for tuberculous pleural effusion.

Method of data collection

The institutional ethical committee clearance was taken before the study. At the first step, all the records pertaining to extrapulmonary TB cases registered from 1st June 2013 to 31st May 2015 were separated and analysed. All the 187 subjects were included in the study. The data was entered into a structured proforma. Study variables included: demographic (age, sex and weight), site of extrapulmonary TB (EPTB), categorization of treatment, diabetic status and HIV status.

Data analysis

The collected data was entered and analyzed by using SPSS Version 16. Chi-square test was used to know if differences observed in different groups were statistically significant. Data was described in proportion or percentages. *P* value of < 0.05 was considered significant.

RESULTS

In the study period, a total of 359 tuberculosis cases were registered in DOTS centre in which 248 (69.08%) were males and 111 (30.92%) were females.

Table 1: Baseline characteristics.

	Number	%
Age in years		
1-20	12	6.41
21-40	57	30.48
41-60	73	39.03
61-80	43	22.99
Above 80	2	1.07
Sex		
Male	112	59.9
Female	75	40.1
Category		
CAT1	170	90.9
CAT2	17	9.1
HIV		
Yes	3	1.6
No	84	98.4
Diabetes mellitus		
Yes	23	12.3
No	164	87.7
Weight in kg		
Less than 30	4	2.1
30-40	30	16.0
41-50	56	29.9
51-60	62	33.2
61-70	24	12.8
Above 70	11	5.9

Table 2: Site predilection of extra pulmonary tuberculosis.

Site	Frequency	%
Lymph node	55	29.41
Gastrointestinal	45	24.06
Pleura	44	23.53
Skeletal	14	7.49
Central nervous system	7	3.74
Genitourinary	6	3.21
Skin	5	2.67
Breast	4	2.14
Pericardium	3	1.60
Psoas	2	1.07
Vocal cord	1	0.53
Eye	1	0.53

73 (39.03%) patients were in the age group 41-60 years. 57 (30.48%) patients in the age group 21-40 years.

43 (22.99) patients were in the age group 61-80. 12(6.41) patients were in the age group 1-20 years. Only 2 (1.07%) patients were above 80 years of age.

Table 3: Association of age & gender.

Age in yrs	Male	Female	Total
1-20 yrs	6	6	12
21-40	34	23	57
41-60	46	27	73
61-80	25	18	43
Above 80	1	1	2

In the total 359 cases, 187 (52.08%) were extrapulmonary tuberculosis. Among the extra pulmonary tuberculosis 112 (59.9%) were males and 75 (40.1%) were females. About 170 (90.9%) patients received CAT1 treatment and 17 (9%) patients received CAT2 treatment.

Table 4: Association of site and gender.

Site	Male	Female
Lymph node	25	30
Gastrointestinal	27	18
Pleural	38	6
Skeletal	10	4
CNS	3	4
Genitourinary	1	5
Skin	3	2
Breast	0	4
Pericardium	2	1
Psoas	2	0
Vocal cord	1	0
Eye	0	1

P value: 0.000 - Significant

The number and percentage of cases of different types of EPTB in different age groups was calculated. Lymph node tuberculosis was the commonest type of tuberculosis accounting for 10 (83.33%) cases in the age group of 1-20 years. In the age group 21-40 the most common EPTB is gastrointestinal (20 cases, 35.08%) and Lymph node TB and pleural TB accounted for 12 cases (21.05%). Lymph node TB was the commonest type of presentation in the age group of 41-60 years.

In this study, 23 (12.3%) cases had diabetes mellitus. Only 3 (1.6%) had human immunodeficiency disease. 11 patients were having a weight of more than 70 kg and 4 patients were having less than 30kg weight. 62 patients were in the range of 51-60kg weight. 56 (29.9%) patients were in the range of 41-50kg weight. 30 (16%) patients were in the range of 31-40kg weight. 24 (12.8%) patients were in the range of 61-70kg weight.

The most common site of EPTB was Lymph node. 55 (29.41%) patients were having lymph node tuberculosis.

Gastrointestinal tuberculosis was found in 45 (24.06%) patients. Pleural tuberculosis in 44 (23.53%) patients and skeletal tuberculosis in 14 (7.49%) patients. CNS tuberculosis was found in 7 (3.74%) patients. Genitourinary tuberculosis in 6 (3.21%) patients. Skin tuberculosis in 5 (2.67%), breast tuberculosis in 4 (2.14%), tuberculosis of pericardium in 3 (1.6%), psoas tuberculosis in 2 (1.07%), vocal cord tuberculosis and tuberculosis of eye in 1 (0.53%) patients each.

Table 5: Association of diabetes mellitus & site of EPTB.

Site	Diabetes		Total
	Yes	No	
Lymph node	3	52	55
Pleural	9	35	44
GIT	2	43	45
Skeletal	3	11	14
CNS	0	7	7
Breast	1	3	4
Skin	1	4	5
Psoas	1	1	2
Pericardium	1	2	3
Genitourinary	1	5	6
Vocal cord	0	1	1
Eye	1	0	1

P value: 0.026 - Significant

In the age group 1-20 years 6 patients were males and 6 were females. In the age group 21-40 years 34 patients were males and 23 were females. In the age group 41-60 years 46 patients were males and 27 were females. In the age group 61-80 years 25 patients were males' and 18 were females. 2 patients were above 80 years of age, 1 male and 1 female.

In the total 55 cases of lymph node tuberculosis 30 were females and 25 were males. Out of 45 cases of GIT, 27 were males and 18 were females. Pleural tuberculosis and skeletal TB were common in males whereas genitourinary TB common in females

In lymph node TB, 3 patients were having diabetes mellitus. 9 out of 44 were having diabetes mellitus in pleural tuberculosis. The one patient with tuberculosis of eye had diabetes mellitus.

DISCUSSION

Many studies predicted that mostly pleura and regional lymph nodes are likely to be involved. Gonzalez et al. reported 538 EPTB cases (28.6%) in a total of 1,878 enrolees.²⁰ The most common sites of infection were lymph nodes (43%) and pleura (23%). In the same study, African American ethnicity was found to be an independent risk factor for EPTB. Recently Ilgazli et al. reported 636 cases with EPTB, out of which 56.3% were

lymph node tuberculosis, followed by pleural tuberculosis (31.1%).²¹

A study from England showed that lymph node involvement was the most common site in the body.^[22] However, a study from Hong Kong showed the most common sites were pleura, followed by lymph node; and one-third of all cases had pulmonary tuberculosis. A study in Holland showed that the most common sites of EPTB were pleura and lymph node, equally (17%).¹⁸ Maltezou and his colleagues found the lymph node was the most common site of EPTB in children and EPTB constituted 9% of all cases with TB. Lymph node involvement in EPTB was correlated with HIV co-infection, female gender, young age and Asian race.^{23,24}

In our study lymph node involvement was the most common site (29.411%) and second most common site is gastrointestinal (24.04%). Pleural involvement was in the third place. This is because we excluded cases having both pulmonary and extrapulmonary from the study. Some of the patients with pleural effusion also had pulmonary tuberculosis.

In this study males are predominantly involved (59.9%) & this was consistent with a study by Ramaprakash and colleagues (51.52 %).¹⁵ In our study the % of males in total TB cases was 69.08% Which is high comparing with EPTB. In this study majority had taken CAT1 treatment (90.9%). This finding also consistent with Ramaprakash and colleagues.¹⁵ In this study majority of cases (73, 39.03%) belonged to the age group of 41-60 years (73, 39.03%). Some previous studies reports higher incidence of EPTB in younger individuals less than 40.^{7,15,25}

In this study, 3 patients were HIV positive and all of them had gastrointestinal tuberculosis. 23 patients were suffering from diabetes mellitus in our study. Our studies showed significant association between site of EPTB and gender and also site of EPTB with diabetes mellitus.

CONCLUSION

EPTB still constitutes an important clinical problem. In the current study, we assessed the site of predilection of EPTB patients. In this study, EPTB cases constituted 52.08% of all tuberculosis cases presented to our center in the study period. Lymph node tuberculosis is the most common type.

Limitations

Single centred & a retrospective study. Follow up study after treatment was not done. Clinical presentations of different types of EPTB not studied

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