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Research Article

Clinical Profile of Patients with Extrapulmonary Tuberculosis at a Tertiary Care Hospital, New Delhi

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ABSTRACT:

Background: Tuberculosis is a serious health problem worldwide and constitutes the main infectious cause of death. There are two types of clinical manifestation of tuberculosis are pulmonary tuberculosis and extrapulmonary tuberculosis. Apart of this, extra pulmonary tuberculosis, highly vascular areas such as lymph nodes, kidneys, spine, eyes, bones etc are commonly affected.

Methods: The aim of the present study was carried out to determine the clinical profile of patients presenting with EPTB. The diagnosis of extrapulmonary tuberculosis relies on the detection of the causative organism after Staining technique for AFB Zeal-Neelsons method, Ultrasonography of abdomen, Computed Tomography (CT) and Magnetic Resonance Imaging (MRI).

Results: Our study comprised of 151 individuals, out of whom EPTB showed similar preponderance in males and females. Maximum patients were in the age group 21-30years. Mean age of the study patients was 38.9 years with a standard deviation of 16.5 years. lymphadenitis as the most common form of EPTBin both males and females, followed by pleura, bones & joints, brain & Meninges, Miliary TB and TB abscess. Histopathology is the most commonly used method of diagnosis, followed by chest X ray. Past history of pulmonary TB and concurrent pulmonary TB are more chances to get the EPTB, 4(2.66%) patients had HIV seropositivity. DTB was found to be the commonest EPTB in HIV co-infected patients.

Conclusions: In developing countries, the proportion of EPTB is relatively higher. Thus, based on our study there is a need to develop novel diagnostic techniques for appropriate treatment of extra pulmonary tuberculosis and to prevent its complications. Moreover, the treatment should be recommended by the WHO.

Key words: Extrapulmonarytuberculosis, Ultrasonography, lymphadenitis and Magnetic Resonance Imaging

INTRODUCTION:

Tuberculosis (TB) is a serious health problem worldwide and constitutes the main infectious cause of death. It can involve any organ system in the body. India is the highest TB burden country in the world, accounting for 21% of global incidence and 2/3 of cases in south East Asia. In the year 2008, the incidence of tuberculosis was reported to be 1.98 million with prevalence of 2.186 million and mortality due to TB being 2,76512.[1] In India, Extra pulmonary Tuberculosis comprises of 20% all TB cases.[2]

The two types of clinical manifestation of tuberculosis (TB) are pulmonary TB (PTB) and extrapulmonary TB (EPTB). The former is most common. EPTB refers to TB involving organs other than the lungs e.g., pleura, lymph nodes, abdomen, genitourinary tract, skin, joints and bones, or meninges. A patient with both pulmonary and EPTB is classified as a case of PTB. For example, miliary TB is classified as PTB because there are lesions in the lungs. On the other hand, tuberculous intrathoracic lymphadenitis (mediastinal and/or hilar) or tuberculous pleural effusion, without radiographic abnormalities in the lungs, constitutes a case of EPTB.

Definitions were recommended by the World Health Organization.[3]

Pulmonary Tuberculosis (PTB): Two or three initial sputum smear examinations positive for AFB, or one sputum smear positive for AFB plus radiographic abnormalities consistent with active pulmonary tuberculosis, as determined by a clinician, or one sputum smear positive for AFB (smear-positive cases). Cases with three sputum smears negative for AFB but clinical and radiological features compatible with active tuberculosis and showing improvement after empirical anti-tuberculosis treatment were considered to be smear-negative cases. Both smear-positive and smear-negative patients were treated as pulmonary TB cases for our data analysis.[3]

Extrapulmonary Tuberculosis (EPTB): This includes tuberculosis of organs other than lungs, such as lymph nodes, abdomen, genitourinary tract, skin, joints and bones, meninges, etc. Diagnosis of EPTB was based on fine needle aspiration cytology or biochemical analyses of cerebrospinal/pleural/ ascitic fluid or histopathological examination or strong clinical evidence consistent with active extra-pulmonary tuberculosis, followed by a decision of a clinician to treat with a full course of anti-tuberculosis chemotherapy.

Diagnostic procedures including imageological methods,

blood tests or laparotomies for excision biopsies, Mantoux tests, and BCG challenge tests were also used for the diagnosis of EPTB. In all the cases of EPTB, sputum examinations and chest radiographs were used to investigate the involvement of lung parenchyma[3] Extrapulmonary tuberculosis generally occurred most often in immunosuppressed patients but 34% of cases were observed in people without risk factors. Microbiologically proven tuberculosis represented only 75% of cases despite numerous investigations. Hences, the aim of the present study was carried out to determine the clinical profile of patients presenting with EPTB at a tertiary care center in Holy Family Hospital, New Delhi.

MATERIALS AND METHODS

The Prospective study was conducted from August 2014 to July 2016 at Holy Family Hospital, New Delhi, patients were admitted to the hospital out and in-patients in General Medicine department. Who developed the symptoms of EPTB during the period including Inclusion criteria and Exclusion criteria.All patients gave consent form and Institutes Ethics Committees approved.

The serum samples of all patients who developed Extrapulmonary tuberculosis. After obtaining an informed history, general physical examination and systemic examination was done. Microbilogical and radiological methods likes Tuberculin Skin Test (TST) ,Smear staining for AFB Zeal-Neelsons method, Ultrasonography of abdomen, Computed Tomography(CT) and Magnetic Resonance Imaging(MRI) in all patients.

Pulmonary tuberculosis cases (PTB) were defined as cases having two or three initial sputum smear examinations positive for AFB, or one sputum smear positive for AFB plus radiographic abnormalities consistent with active pulmonary tuberculosis, as determined by a clinician, or one sputum smear positive for AFB (smear-positive cases). Cases with three sputum smears negative for AFB but clinical and radiological features compatible with active tuberculosis and showing improvement after empirical anti-tuberculosis treatment were considered to be smear-negative cases. Both smear-positive and smear-negative patients were treated as pulmonary TB cases for our data analysis.[4]

Extra-pulmonary Tuberculosis (EPTB) cases were defined as tuberculosis of organs other than the lungs, such as lymph nodes, abdomen, genitourinary tract, skin, joints and bones, meninges, etc. Diagnosis of EPTB was based on fine needle aspiration cytology or biochemical analyses of cerebrospinal/pleural/ ascitic fluid or histopathological examination or strong clinical evidence consistent with active extra-pulmonary tuberculosis, followed by a decision of a clinician to treat with a full course of anti-tuberculosis chemotherapy. Diagnostic procedures including imagological methods, blood tests or laparotomies for excision biopsies, Mantoux tests were also used for the diagnosis of EPTB. In all the cases of EPTB, sputum examinations and chest radiographs were used to investigate the involvement of lung parenchyma.

Statistical Analysis: Which were performed using the SPSS version 20.0. The data collected was fed to MS Excel and subjected to statistical analysis. Since it is an observational study, descriptive statistics like percentages, proportions, central distributions, standard deviations etc. was used to describe the results. The differences in proportions were tested for statistical significance by using chi-square test. Yates correction was applied wherever necessary. ANOVA test was applied for evaluation of any statistical significance in difference of means. Post hoc test was not applied after ANOVA since none of them were found statistically significant. For all statistical tests, p value less than 0.05 was taken to indicate a significant difference.

RESULTS

Tuberculosis is a major health problem throughout the world. Inhalation is the most susceptible pathway of *Mycobacterium tuberculosis* infection, pulmonary tuberculosis being the predominant one. Apart from this, Extra Pulmonary Tuberculosis may also arise as a result of the reactivation of tuberculous focus after dissemination from a chief focus, being a manifestation of tuberculosis infecting about 20% of population worldwide. Total 162 patients meeting the inclusion criteria were admitted in the Department of Medicine with in this period, out of which eight patients refused for consent and four patients refused for biopsy. So, 151 patients were included in this study.

Table: 1 Gender wise distribution of patients.

SEX	No of patients	%
Male	75	49.67%
female	76	50.33%
Total	151	100%

The study comprised of 151 individuals, out of which 118 (78.7%) were males and 32 (21.3%) were females.

Table: 2 Distribution of male and female EPTB patients in to various age groups

S.No	Age Group (years)	Males		Females		Total	
		Cases	%	Cases	%	Number	% (column)
1	11 to 20	3	27.27%	8	72.73%	11	7.28%
2	21 to 30	21	38.18%	34	61.82%	55	36.42%
3	31 to 40	16	61.54%	10	38.46%	26	17.22%
4	41 to 50	12	48.00%	13	52.00%	25	16.56%
5	51 to 60	12	70.59%	5	29.41%	17	11.26%
6	61 to 70	4	57.14%	3	42.86%	7	4.64%
7	71 to 80	6	75.00%	2	25.00%	8	5.30%
8	81 to 90	1	50.00%	1	50.00%	2	1.32%
Total		75	49.67%	76	50.33%	151	100.00%
Mean ± SD (in years)		42.2 ± 17.3		35.6 ± 15.0		38.9 ± 16.5	

A vast majority of cases belonged to age group of 21 to 30 years. 81.5% of cases were in the age group of 21 to 60. The mean age of the sample was 38.9 years with a standard deviation of 16.5 years. Relatively younger age groups were affected by extra pulmonary tuberculosis in females (mean = 35.6 years) than in males (mean = 42.2 years).

Table 3: Types of Extrapulmonary TB according to different age groups.

S. No	Age Group (years)	No of Cases	%	Bones & Joints	Gastro intestinal	Genito urinary	Lymph-atic	Miliary TB	Neural	Plueral	Tb Abscess
1	11 to 20	11	7.28	-	-	-	5	1	2	3	-
2	21 to 30	55	36.42	4	3	2	29	2	3	6	6
3	31 to 40	26	17.22	1	-	3	7	2	3	9	1
4	41 to 50	25	16.56	2	1	-	8	3	2	8	1
5	51 to 60	17	11.26	3	2	-	3	1	2	4	2
6	61 to 70	7	4.64	2	-	1	1	1	1	1	-
7	71 to 80	8	5.3	3	-	-	3	1	-	1	-
8	81 to 90	2	1.32	-	-	-	1	-	-	1	-

Out of 151, 29 cases of lymph node Tuberculosis were in the age group of 21 to 30 years. Most cases of pleural TB were in the age group of 31 to 50 years. TB abscess cases also were highest in 21-30 age group.

Table:4 Different sites of EPTB in male patients according to their age group.

.S. No	Age Group (years)	No of Cases	Bones & Joints	Gastro intestinal	Genito urinary	Lymph-atic	Miliary TB	Neural	Plueral	Tb Abscess
1	11 to 20	3	0	0	0	1	0	2	0	0
2	21 to 30	21	2	1	1	9	0	2	3	3
3	31 to 40	16	1	0	2	4	2	1	6	0
4	41 to 50	12	1	0	0	5	1	1	3	1
5	51 to 60	12	1	2	0	2	1	1	3	2
6	61 to 70	4	1	0	0	1	0	1	1	0
7	71 to 80	6	2	0	0	3	1	0	0	0
8	81 to 90	1	0	0	0	1	0	0	0	0
	Total	**75**	**8**	**3**	**3**	**26**	**5**	**8**	**16**	**6**

Among male patients with tuberculosis, 9 (34.6%) suffering from lymphatic tuberculosis were in the age group of 21 to 30 years and 6 (37.5%) with pleural tuberculosis fell in the age group of 31 to 40 years. 2 (67%) with genitourinary tuberculosis were from the age group of 31 to 40 years. In those with tuberculosis of bones and joints, 2 each (25%) were from the age groups of 21 to 30 years and 71 to 80 years respectively.

Table: 5 Female EPTB patients and their distribution according to site of EPTB

S No	Age Group (years)	No of Cases	Bones & Joints	Gastro intestinal	Genito urinary	Lymph-atic	Miliary TB	Neural	Plueral	Tb Abscess
1	11 to 20	8	0	0	0	4	1	0	3	0
2	21 to 30	34	2	2	1	20	2	1	3	3
3	31 to 40	10	0	0	1	3	0	2	3	1
4	41 to 50	13	1	1	0	3	2	1	5	0
5	51 to 60	5	2	0	0	1	0	1	1	0
6	61 to 70	3	1	0	1	0	1	0	0	0
7	71 to 80	2	1	0	0	0	0	0	1	0
8	81 to 90	1	0	0	0	0	0	0	1	0
	Total	**76**	**7**	**3**	**3**	**31**	**6**	**5**	**17**	**4**

Among female patients with tuberculosis, 20 (64.5%) with lymphatic tuberculosis were from the age group of 21 to 30 years and 5 (29%) with pleural tuberculosis fell into the 41 to 50 years age group. 2 (67%) with gastrointestinal tuberculosis, were in the age group of 21 to 30 years.

Table: 6 Site of EPTB

S.No	Site of EPTB	Total		Males		Females	
		N	% (column)	N	%	N	%
1	Lymph nodes	57	37.75%	26	45.61%	31	54.39%
2	Pleura	33	21.85%	16	48.48%	17	51.52%
3	Bones & Joints	15	9.93%	8	53.33%	7	46.67%
4	Brain & Meninges	13	8.61%	8	61.54%	5	38.46%
5	Miliary TB	11	7.28%	5	45.45%	6	54.55%
6	Tb Abscess	10	6.62%	6	60.00%	4	40.00%
7	Genitourinary	6	3.97%	3	50.00%	3	50.00%
8	Gastrointestinal	6	3.97%	3	50.00%	3	50.00%
Total		**151**	**100%**	**75**	**49.67%**	**76**	**50.33%**

Lymph nodes were the most common site of EPTB in the sample with 37.75%, followed by Pleura (21.85%) and bones & joints (9.93%). Genitourinary and gastrointestinal tuberculosis were less frequently found (3.97% each).

Table: 7 EPTB associations with concurrent pulmonary tuberculosis.

S .No	Site of EPTB	Pulmonary TB present		PulmonaryTB Absent		Total
		N	%	N	%	
1	Lymph nodes	11	19.30%	46	80.70%	57
2	Pleura	8	24.24%	25	75.76%	33
3	Bones & Joints	4	26.67%	11	73.33%	15
4	Brain & Meninges	2	15.38%	11	84.62%	13
5	Miliary TB	3	27.27%	8	72.73%	11
6	Tb Abscess	1	10.00%	9	90.00%	10
7	Genitourinary	0	0.00%	6	100.00%	6
8	Gastrointestinal	4	66.67%	2	33.33%	6
Total		**33**	**21.85%**	**118**	**78.15%**	**151**

Yates' Chi square = 5.778; DoF = 7; p= 0.566; statistically insignificant

33 (21.85%) had associated pulmonary tuberculosis at the time of presentation. 66.67% of gastrointestinal tuberculosis cases had associated Pulmonary tuberculosis whereas none of the cases of genitourinary type had associated Pulmonary tuberculosis. The differences observed were statistically insignificant.

Table 8: Past History of pulmonary tuberculosis

S. No	Site of EPTB	Past H/O PTB present		Past H/O PTB absent		Total
		N	%	N	%	
1	Lymph nodes	4	7.02%	53	92.98%	57
2	Pleura	6	18.18%	27	81.82%	33
3	Bones & Joints	3	20.00%	12	80.00%	15
4	Brain & Meninges	4	30.77%	9	69.23%	13
5	Miliary TB	3	27.27%	8	72.73%	11
6	Tb Abscess	1	10.00%	9	90.00%	10
7	Genitourinary	2	33.33%	4	66.67%	6
8	Gastrointestinal	3	50.00%	3	50.00%	6
Total		**26**	**17.22%**	**125**	**82.78%**	**151**

Yates' Chi square = 7.384; DoF = 7; p= 0.389; statistically insignificant

26 (17.22%) of the sample had past history of pulmonary tuberculosis. 50% of gastrointestinal tuberculosis cases had past history of pulmonary tuberculosis whereas mere 7.02% of the cases with lymph node involvement had past history of pulmonary tuberculosis. The differences observed were statistically insignificant.

Table: 9 Family History of tuberculosis

S. No	Site of EPTB	Family H/O TB present		Family H/O of TB absent		Total
		N	%	N	%	
1	Lymph nodes	24	42.11%	33	57.89%	57
2	Pleura	9	27.27%	24	72.73%	33
3	Bones & Joints	3	20.00%	12	80.00%	15
4	Brain & Meninges	5	38.46%	8	61.54%	13
5	Miliary TB	4	36.36%	7	63.64%	11
6	Tb Abscess	6	60.00%	4	40.00%	10
7	Genitourinary	5	83.33%	1	16.67%	6
8	Gastrointestinal	3	50.00%	3	50.00%	6
Total		**59**	**39.07%**	**92**	**60.93%**	**151**

Chi square = 11.6; DoF = 7; p= 0.116; statistically insignificant

59 (39.07%) of the sample had family history of tuberculosis. 83.33% of Genitourinary tuberculosis cases had family history of tuberculosis whereas 20% of the cases with Bones & joints involvement had family history of tuberculosis. The differences observed were statistically insignificant.

Table 10: Sputum/Smear AFB status with AFB

S. No	Site of EPTB	Sputum/Smear AFB positive		Sputum/Smear AFB negative		Total
		N	%	N	%	
1	Lymph nodes	0	0.00%	15	100.00%	57
2	Pleura	3	50.00%	3	50.00%	33
3	Bones & Joints	0	0.00%	6	100.00%	15
4	Brain & Meninges	1	1.75%	56	98.25%	13
5	Miliary TB	2	18.18%	9	81.82%	11
6	Tb Abscess	1	7.69%	12	92.31%	10
7	Genitourinary	1	3.03%	32	96.97%	6
8	Gastrointestinal	0	0.00%	10	100.00%	6
Total		**8**	**5.30%**	**143**	**94.70%**	**151**

8 cases (5.30%) of the sample had positive AFB in sputum. Only 50% of pleural tuberculosis cases had AFB in sputum whereas none of the cases with Bones & joints or gastrointestinal and nodal involvement had AFB in sputum.

Table: 11 History of smoking

S No	Site of EPTB	H/O smoking present		No H/O smoking		Total
		N	%	N	%	
1	Lymph nodes	7	12.28%	50	87.72%	57
2	Pleura	4	12.12%	29	87.88%	33
3	Bones & Joints	0	0.00%	15	100.00%	15
4	Brain & Meninges	2	15.38%	11	84.62%	13
5	Miliary TB	3	27.27%	8	72.73%	11
6	TB Abscess	2	20.00%	8	80.00%	10
7	Genitourinary	0	0.00%	6	100.00%	6
8	Gastrointestinal	2	33.33%	4	66.67%	6
Total		**20**	**13.25%**	**131**	**86.75%**	**151**

Chi square = 7.73; DoF = 7; p= 0.357; statistically insignificant

20 (13.25%) of the sample patients had past history of smoking. 33.33% of gastrointestinal tuberculosis cases had past history of smoking whereas none of the cases with bones & joints involvement and genitourinary tuberculosis had past history of smoking. The differences observed were statistically insignificant.

Table 12: History of Chronic diseases

S No	Chronic condition	No of Cases	%	Bones & Joints	Gastro intestinal	Genito urinary	Lymph-atic	Miliary TB	Neural	Plueral	Tb Abscess
1	Diabetes	10	6.62	2	1	0	4	1	1	1	0
2	Respiratory/ COPD causes	6	3.97	1	1	1	2	0	0	1	0
3	Cardiac Diseases	4	2.65	1	0	0	2	0	0	0	1
4	CVA	3	1.99	1	0	0	1	1	0	0	0
5	Hypertension	3	1.99	1	0	0	1	1	0	0	0
6	Cancer	3	1.99	0	0	0	1	1	1	0	0
7	CKD	1	0.66	0	0	0	0	1	0	0	0

10 cases of EPTB had a history of Diabetes. 4 of them had lymph node involvement. 6 cases had prior respiratory diseases including COPD. They had lymphatic, bones/joint, GIT, Genitourinary or pleural involvement. 4 cases had cardiac disorders, while 3 patients each had history of Cerebrovascular accidents, Hypertension and cancers. One patient was suffering from chronic renal disease.

Table 13: EPTB relation with viral serology.

S No	Viral Infection	No of Cases	%	Bones & Joints	Gastro intestinal	Genito urinary	Lymph-atic	Miliary TB	Neural	Plueral	Tb Abscess
1	HIV	2	2.66%	1	0	0	1	2	0	0	0
2	Hepatitis – B	0	0.00%	0	0	0	0	0	0	0	0
3	Hepatitis – C	0	0.00%	0	0	0	0	0	0	0	0

4cases were found to be HIV positive. While one had Miliary tuberculosis, the other case had lymph node associated tuberculosis. No cases of Hepatitis B or Hepatitis C were found among the sample.

DISCUSSION

EPTB is one of most common infectious diseases causing significant mortality and morbidity worldwide, especially developing countries like India. This was a prospective, observational study done at Holy family hospital, New Delhi on 151 patients, to study the clinical profile of EPTB patients in between August 2014 to May 2016.

Out of 51 patients included in this study there were nearly equal number of male (n=75) and female (n=76) patients. This finding was correlated with Tatar et al,Segvi DY et al, study it showed female predominance seen in other studies viz. Some studies also showed male predominance like Diez Met al.[5] Gunal et al study showed Genitourinary and gastrointestinal tuberculosis were less frequently found and with equal number in both sexes, these findings were consistent in present study.

In present study the mean age of the sample was 38.9 years with a standard deviation of 16.5 years. Similar finding was observed in studies by Nissapatorn V et al,[6] But our study showed patients were younger as compared to the study conducted by that Kourbatova et al (47.58Yrs).

Our study showed, most common involved group was 21 to 30 yrs with 55% of all cases. Similar study reported by Al Otaibi fed et al.[7]

Present study showed that lymph node Tuberculosis (37.75 %.) was the most common site of EPTB. This finding was similar to that of other studies by C T Sreerama reddy et al, H M peto et al.[8] This finding is different from other studies like Tatar et al, in which pleura was the most common site for EPTB, whereas bones and joints were the most common site of EPTB in the study conducted by Lin JM et al.

According to Dolberg OT et al , study showed genitourinary tract as the most common site in their study, while meninges were the most common site in the findings Segvi DY et al. Disseminated forms were frequent and the most common in Diez Met al.[9] Genitourinary and Gastrointestinal tuberculosis were less frequently found (3.97% each) in our study.

As previous history of TB may increase the chances of getting EPTB, Our study also relation between past history of PTB or concurrent PTB and EPTB. 26 cases (17.22%) out of 151 patients had history of PTB. This find was nearly close to the observation by Denis-Delpierre Net al[10] (23%).This finding was higher than that of Nissapatorn V et al[6] in whose study, patients with past history of PTB were only 3.6%. We also observed that 50% of gastrointestinal tuberculosis cases had past history of PTB, whereas a mere 7.02% of the cases with lymph node involvement had past history of PTB. The differences observed were statistically insignificant. This observation is different from that of Sanches et al study, which showed that the presence of previous TB treatment increases the risk of disseminated disease.

In present study, 33 (21.85%) patients had associated PTB at the time of presentation. It is closer to the observation of Shanmugnathan et al (17.3% patients)Ozavaran MK et al showed that 8% of EPTB cases had PTB simultaneously which is much less than the observation made in this study. As 66.67% of gastrointestinal tuberculosis cases had associated PTB whereas none of the cases of genitourinary type had associated PTB.

Out of 151, 59 (39.07%) patients had family/contact history of tuberculosis. This finding was higher than that of Musellim et al (23.7%). A considerable percentage of patients (83.33%) with genitourinary tuberculosis had family/contact history of tuberculosis whereas 20% of the cases with bones & joints involvement had family history of tuberculosis. But G Rodríguez J F et al[11]observation showed contact with PTB has a protective effect in EPTB.

Our study showed that effect of smoking on EPTB. 20 (13.25%) cases of the patients had a history of smoking. This finding is comparable to that o f Muselim et al with a calculated 23% cases. 33.3% of gastrointestinal tuberculosis cases had history of smoking whereas none of the cases with bones & joints involvement and genitourinary tuberculosis had history of smoking. The differences observed were statistically insignificant which is in contrast to the observation by Lin JN et al whose study showed smoking as an independent risk factor for EPTB. Interestingly, observations by G Rodríguez JF et al[11] showed that smoking had a protective effect against EPTB.

In present study observed the relation between EPTB and other co-morbid conditions. But most of the study patients belonged to a younger age group and the frequency of other co-morbid conditions was too low to make a comparison. Hence, we were unable to assert the exact relation between co-morbid conditions and EPTB. 29 (19.2%) study cases had history of co-morbid conditions. Among them,10 patients of EPTB had a history of diabetes, 6 study patients had prior respiratory diseases including COPD,4 cases had cardiac disorders, while 3 patients each had history of cerebrovascular accidents, hypertension and malignancies. One patient was suffering from chronic renal disease. But many other studies found co-morbid conditions as a risk factor for developing EPTB. Salami et al identified the following risks for acquiring and developing active TB in the hospital: Diabetes mellitus 9.4%, "Alcoholic" liver cirrhosis 6.3% and chronic obstructive pulmonary disease 3.1%. Sanches I et al found that pre-existing liver disease was an independent risk factor for peritoneal TB. Magee MJ et al [12] conducted a study about the impact of diabetes on EPTB and found that diabetes was common in patients with EPTB and risk of death was high.

Out of the 151 studied patients, 4(2.66%) patients had HIV seropositivity. This finding is similar to that of Shanmuganathan et al (2.7%) but lower than that of Manjareeka M et al [13] (12.3%) and Diez et al [9] (17.7%). Commonest EPTB in HIV co-infected patients was DTB, which is consistent with the observation of Sanches et al and Wiwantworapan T et al observation, but in contrast to other studies like Kamenjo et al (Pleural effusion), Spalgias et al (abdomen), Hochedez Petal[14] (abdominal lymph node), Jaryal A et al[15](CNS tuberculosis). Because of less number of HIV seropositivity patients in this study, we are not able claim HIV as a risk factor for EPTB. In addition, Sanches et al also

showed that HIV co-infection increases the risk of disseminated disease

In present study histopathology including fine needle aspiration and biopsy showed positive findings in 100% of patients with lymph node and GIT TB in our study. 64.9% of patient's histopathology showed positive findings. As in Nissapatsorn V et al observation, this study also showed lymph node as the most common site for histopathological examination. Jaryal A et al[15] also found FNAC as a most common used modality of investigation. In Ade S et al study 130 (7%) EPTB patients had a confirmed bacteriological/histological diagnosis.

Our study showed that most common finding was normal chest x-rays accounting 86 (56.9%) patients followed by pleural effusions in 33(21.8%) patients. On the contrary Kumar et al study in HIV TB co-infected patients revealed infiltrative lesions in 61.9% chest x-rays. Study by Nissapatsorn Vet al showed x-ray findings suggestive of EPTB in 42% patients.

Ultrasonography was useful in diagnosing EPTB patients especially in pleural effusion, abdominal TB. Spalgias et al also observed that routine use of Ultrasonography showed advantage in reaching diagnosis, followed by CT in conclusive cases.

CONCLUSIONS

Diagnosis of extrapulmonary tuberculosis is challenging because clinical samples obtained from relatively inaccessible sites may be paucibacillary and decreasing the sensitivity of tests. In developing countries, the proportion of EPTB is relatively higher. Thus, based on our stud y there is a need to develop novel diagnostic techniques for appropriate treatment of extra pulmonary tuberculosis and to prevent its complications. Moreover, the treatment should be recommended by the WHO.

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