Clinico-Epidemiological Profile of Extra Pulmonary Tuberculosis in Western India

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ABSTRACT

Introduction: Tuberculosis (TB) remains a major global health problem and India being highest tuberculosis burden country, needs concern. The percentage of patients with extrapulmonay tuberculosis(EPTB) in tertiary care centres of India ranged from 30-55%. The primary objective of this study was to know the proportion of PTB to EPTB, classify EPTB patients in relation to different anatomic sites of involvement and to correlate them in relation to epidemiological factors like age, sex and also to study their correlation with HIV and diabetes mellitus, the most important risk factor influencing EPTB in the tertiary care centre obtained from RNTCP records of Goa State

Material and methods: This was a retrospective, record based study of patients of EPTB at Goa Medical College and hospital, Goa from 1st Jan 2013 to 31 Dec 2015

Results: Among the 1598 cases registered for treatment of tuberculosis during this period, 492(30.9%) had EPTB and 1106(69.1%) had PTB The ratio of EPTB:PTB is 1:2.2, commonest type of EPTB was TB in pleural cavity (39.43%), followed by lymph node and lymphatics (27.6%) The prevalence of EPTB cases was higher among males as compared to females. Among different age groups studied the age group of 30-50years had the highest proportion of EPTB both in males and females. 46(9.34%) of the cases of EPTB were immunocompromised with HIV and 47(9.55%) had diabetes mellitus

Conclusion: The proportion of EPTB cases in this study was higher 30.9% with highest proportion formed by TB of plueral cavity 39.43% The burden of EPTB is more among the productive age group mostly in young male adults, which is the economically productive population of the society. Having associated immunocompromised status with HIV and DM was significant risk factors for EPTB patients

Keywords: Extrapulmonary Tuberculosis, Pleural Effusion, RNTCP

INTRODUCTION

Tuberculosis remains a major global health problem with 1/3 of world's population being infected with tuberculosis Along with HIV, Diabetes mellitus and recently evolved drug resistant tuberculosis, it is a big threat for mankind.

TB can involve any organ system in the body.While PTB is the most common presentation, EPTB is also an important clinical problem.[1-4] The term EPTB has been used to describe isolated occurence of TB at body sites other than the lungs[1] Diagnosis of EPTB is done as per RNTCP guidelines which is based on one culture positive specimen from extrapulmonary sites or histological evidence or strong clinical evidence consistent with active EPTB followed by medical officer's decision to treat with a full course of anti tubercular therapy under DOTS[5,6] Atypical presentation, lack of diagnostic resources for procurement of tissue or fluid for diagnosis from an accessible sites and a poor yield of conventional diagnostic methods leads a considerable delay in making the diagnosis or diagnosis may be missed.[5] Lately due to the availability of sophasticated investigations like CT, endoscopy, MRI, have tremendously helped in localisation of anatomical site for obtaining tissue for diagnosis.

The percentage of EPTB among all TB cases in developed countries ranges from 12 to 28.5%. In developing countries like India, the percentage of EPTB cases is between 15-20% which has increased to more than 50% among HIV co infected patients[5,7,8] suggesting immunity status of host being a major risk factor of EPTB.[9]

As no authenticated data of EPTB is available in this part of the country retrospective analysis of the data from records of RNTCP in the state of Goa over a period of 3 years from 2013 to 2015 was analysed and is been presented. The aim of the study was to know the proportion of PTB to EPTB during the study period and also to classify EPTB patients in relation to different anatomic sites of involvement and to correlate them in relation to the epidemiological factors like age, sex and also to study the correlation with HIV and diabetes mellitus the most important risk factor influencing EPTB

MATERIAL AND METHODS

This was a retrospective, record based study done to analyse patients of EPTB.

Study Area

Study was conducted in the department of pulmonary medicine, Goa Medical College a tertiary care centre and the data was obtained from RNTCP records of Goa state. State of Goa is a small state occupying the west zone of India having a population of approximately 14 lakhs

Study population

Population included all patients attending various OPDs of

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Type of EPTB cases	Agewise distribution in males						Agewise distribution in females						Total
	10-30		30-50		>50		10-30		30-50		>50		
	cases	%	cases	%	cases	%	cases	%	cases	%	cases	%	
Pleural cavity	42	21.64	68	35.05	40	20.61	21	10.82	18	9.27	5	2.57	194
Lymphatics & LN	29	21.32	23	16.91	12	8.82	27	19.85	35	25.7	10	7.35	136
Abdominal	12	16.90	27	38.02	10	14.08	7	9.83	13	18.3	2	2.81	71
CNS	9	19.14	20	42.55	5	10.63	4	8.51	8	17.0	1	2.12	47
Bone	3	21.42	4	28.57	2	14.28	2	14.28	2	14.2	1	7.14	14
Genitourinary	5	38.46	3	23.07	1	7.69	1	7.69	3	23.0	0	0	13
Disseminated	1	14.28	2	28.57	1	14.28	0	0	3	42.8	0	0	7
Skin	1	25	0	0	0	0	1	25	0	0	2	50	4
Breast	0	0	1	25	1	25	1	25	1	25	0	0	4
Pericardial effusion	0	0	2	100	0	0	0	0	0	0	0	0	2
	102	20.73	150	30.48	72	14.63	64	13.06	83	16.8	21	4.26	492

Table-1: Age distribution

Type of EPTB cases	No of cases	%
Pleural cavity	194	39.43
Lymphatics & LN	136	27.6
Abdominal	71	14.43
CNS	47	9.55
Bone	14	2.83
genitourinary	13	2.63
Disseminated	7	1.41
Skin	4	0.81
Breast	4	0.81
Pericardial effusion	2	0.4
Total	492	

Table-2: Frequency distribution of different sites of EPTB

the hospital of Goa Medical College who were suspected to be suffering from EPTB during the study period.

Study period

Data for this study has been obtained for a period of 3 years from 1st jan 2013 to 31st dec 2015.

Source of information

For this study data was obtained from records of RNTCP.

Inclusion criteria

EPTB cases.

Exclusion criteria

PTB.

PTB with EPTB.

Method

The study included all patients coming to various OPDs of Goa Medical College who were suspected to be suffering from EPTB during the study period. The diagnosis of EPTB was established following the RNTCP programme guidelines which required one culture positive specimen from a extrapulmonary site or histological evidence or strong clinical evidence consistent with active EPTB followed by concerned medical officer's decision to treat with full course of anti tubercular therapy. Whenever needed investigative procedures such as xray, FNAC, pleural fluid aspiration, ultrasonography, computed tomograpy, MRI were performed for diagnosis After diagnosis of EPTB, patients were registered at DOTS centre whereas patients belonging to other villages or districts were referred to DOTS centre of their respective area.

Total 492 cases diagnosed as EPTB were included in the study. The proportion of this EPTB to PTB cases was also evaluated The EPTB cases were categorised as per the age, gender, HIV and diabetic status. In addition, EPTB cases were grouped into categories based on the site of involvement like plueral cavity, lymphatic and lymph nodes, abdominal, CNS, Genitourinary, bone and joint, disseminated, skin, breast, pericardial etc.

STATISTICAL ANALYSIS

Data analysis was done and expressed in percentage. All records pertaining to EPTB cases diagnosed during the study period were collected and analysed.

RESULTS

Pattern of distribution of tubercular patients in the study population

Out of 1598 cases of tuberculosis, 1106 (69.1%) were grouped under pulmonary tuberculosis and rest 492 (30.9%) patients as EPTB. Hence 492 patients of EPTB were included in the study for further analysis. The ratio of EPTB:PTB was 1:2.2

Demographic characteristics of EPTB cases

Sex distribution

Out of 492 patients, 324 patients (66.05%) were males and 168(34.14%) were females Male to female ratio was 1.9:1

Age distribution

Among the various age groups studied the age group 30-50 years had the highest proportion of EPTB cases 233 (47.35%), which is the economically productive population of the society. Next most affected was 10-30 years 166(33.79%). The lowest proportion 93 (18.9%) was observed in >50 years age group (table-1).

Frequency distribution of different sites of EPTB

Table-2 and figure-1 shows that maximum number of cases belonged to pleural cavity 194(39.43%). Lymph node and lymphatics TB was found in 136(27.6%) which is the second most common site Rest of the cases were found in decreasing

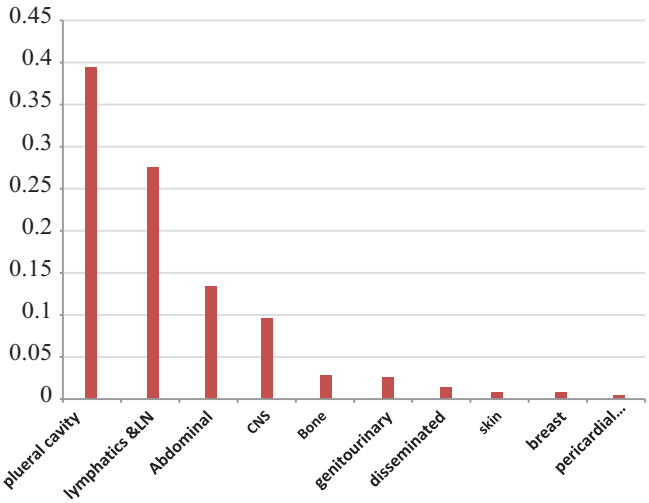

Figure-1: Frequency distribution of different sites of EPTB

order with abdominal 71(14.43%), CNS 47(9.55%), genitourinary 13(2.63%), bone 14 (2.83%) disseminated 7(1.41%) skin 4 (0.81%), breast 4(0.81%), pericardial effussion 2(0.4%).

Associated risk factor HIV and DM

Out of the total 492 cases 92(18.7%) cases were HIV positive and 47(9.55%) cases had DM.

DISCUSSION

EPTB constitutes about 15-20% of all cases of tuberculosis in immunocompetent individuals.[1,7] But in immunocompromised individuals like HIV, diabetes mellitus, COPD, cancers, malnutrition, chronic renal diseases, liver diseases, post organ transplant etc its incidence rises.[7,8] In HIV positive TB patients, EPTB accounts for more than 50%(1).

In our study out of 1598 TB patients, 492(30.9%) were EPTB cases. This percentage of EPTB cases is higher than national statistics possibly due to the fact that ours is a tertiary care centre having the latest investigation modalities for the diagnosis of such cases thus picking up extra number of EPTB cases.

Out of this 400(81.3%) were HIV negative and 92(18.7%) cases of EPTB were HIV positive cases. There were lower number of HIV cases in our study as our state is known to have moderate prevalence rate of HIV infection.

Commonest site for EPTB was pleural cavity found in 194(39.43%) cases, 2nd to follow was lymphatics and lymph node TB found in 136(27.6%) cases followed by abdominal 71(13.41%), CNS 47(9.55%) cases, genitourinary 13(2.63%) cases, bone 14(2.83%) cases, disseminated 7 (1.41%), skin 4(0.81%) cases, breast 4 (0.81%) cases and pericardial effussion 2 (0.4%).

Globally lymphatics and lymph node TB is the most common form of EPTB[6,10,11,12] found in studies from Ethiopia, Canada, Turkey, Nepal and other Indian studies.[10,13,14,15,16] The order of occurence of EPTB is similar to RNTCP reports.[17]

The incidence of pleural cavity tuberculosis was found to be high in our study possibly because our department is a tertiary referral centre for treating all respiratory cases for the whole of the state causing accentuation of pleural cases as compared to other types of EPTB.

Plueral cavity TB was more common in males 150(77.3%) as compared to females 44(22.6%) whereas lymphatics and lymph node TB was found almost in equal frequency in both sexes, males 64(47%) and females 72(52.9%) Abdominal, CNS, genitourinary TB were also predominant in males as compared to females Previous reports also point to such demographic factors.[6,8,10,12,13,16,18,19]

EPTB was found in all age groups but majority of cases 33(47.35%) cases belonged to 30-50 years of age group which is economically and sexually productive age group of the society thus proving it to be a major socio economic burden. Similar reports of high prevalence of EPTB in this age group are reported in other studies from India, Pakistan, Ethiopia, USA, Saudi Arabia, Nepal etc.[6,10,20,11,13,21,22]

Multiple risk factors, social and environmental, make the individuals more susceptible and lower their immunity thereby causing less containment of infection to lung parenchyma and facilitating its spread to extrapulmonary organs, most important risk factor being HIV infection.[7,8]

The prevalence of EPTB with diabetes in our study was 47(9.55%) which is similar to the prevalence found in other studies ranging from 5.4% to 12.8%. Diabetes increases the risk of TB by three times and pleural cavity TB is the most common EPTB among them.[7] Therefore routine screening of diabetes is recommended to target the high risk group for a better clinical outcome

Smokers, alcoholics, COPD and underlying cancer patients have a higher incidence of EPTB in many studies.[23,24]

Ours being retrospective data drawn from records this particular aspect could not be studied due to its non availibility.

To summarise, EPTB forms an important component of total tuberculosis burden of any country and has got important clinical and epidemiological repercussions as far as the planning of diagnosis and management is concerned in that particular country

Limitations of the study

The study being record based it did not include information regarding other risk factors such as nutritional status, smoking, alcohol and drug addictions and other associated respiratory illnesses, vitamin D3 status etc

Secondly it is a hospital based retrospective study and hence findings cannot be generalised to the community at large, but it gives valuable information regarding the trends of EPTB cases and associated risk factors

CONCLUSION

Like PTB, EPTB also remains a significant health problem and carries an important role in epidemiology of TB. EPTB involves economically and sexually productive age group, thus affecting the economy of the country Therefore all the efforts should be directed towards early and prompt diagnosis of such cases with the help of newer diagnostic tests which are more sensitive and specific and these facilities should be extended to the most remote and resource poor areas of the

country

Secondly large scale studies at the national programme level should be conducted to formulate the strategies for expert management of such cases

Every diagnosed case of TB should be subjected to HIV testing and every HIV case if symptomatic for PTB or EPTB should be screened thoroughly

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REFERENCES

1. Sharma SK, Mohan A. Extrapulmonary tuberculosis. Indian J Med Res. 2004;120:316-53.
2. Fanning A. Tuberculosis: 6.Extrapulmonary disease CMAJ 1999;160:1597-603.
3. Iscman MD. Tuberculosis in relation to human immunodeficiency virus and acquired immunodeficiency syndrome. In:Iseman MD, editor. A clinicians guide to tuberculosis. Philadelphia: Lippincott Williams and Wilkins; 2000p.199-252.
4. Dutt AK, Stead WW. Epidemiology, In Schlossberg D, editor. tuberculosis and nontuberculous mycobacterial infection.Philadelphia:W B Saunders Company;1999p3-16.
5. Shrivastava AK, Brahmachari S, Pathak P, Kumar Ratan, Sainia T, Patel U, Mandil A. Clinical Epidemiological profile of Extrapulmonary Tuberculosis in Central India.International Journal of Medical Research and Review 2015;3:223-230.
6. Prakasha SR, Suresh G, D`sa IP, Shetty SS, Kumar SG. Mapping the pattern and trends of extrapulmonary tuberculosis. J Global Infect Dis 2013;5:54-9.
7. TB Statistics for India-TBFacts.org 2012.Available at:http//www.tbfacts.org/tb-statistics-india.html
8. Narian JP, Lo YR. Epidemiology of HIV-TB in Asia. Indian J Med Res.2004;120:277-89.
9. Priya Kandola, Laxman S Meena. Extrapulmonay tuberculosis; Overview manifestations, diagnosis and treatment techniques. Adv Master Rev 2014;1:13-19.
10. Yohannes Zenebe, Belay Anagaw, Woogahta Tesfay, et al.Smear positive extrapulmonary tuberculosis disease at Gondar Hospital, Northwest Ethopia.BMC Research Notes 2013, 6:21.
11. Fiske CT, Griffin MR, Erin H, et al: Black race, sex and extrapulmonary tuberculosis risk an observational study. BMC Infect Dis 2010;10:16.
12. Cailhol J, Decludt B, Che D. Socio demoghraphic factors that contribute to the development of extrapulmonary tuberculosis were identified J Clin Epidemiol 2005;58:1066-71.
13. Sreeramareddy CT, Panduru KV, Verma SC, et al. Comparison of pulmonary and extrapulmonary tuberculosis in Nepal, a hospital based retrospective study BMC Infect Dis 2008, 8:8.
14. H Yang, S K Field, D A Fisher, R L Cowie. Tuberculosis in Calgary, Canada, 1995-2002:site of disease and drug susceptibility. Int J Tuberc Lung Dis 2005;9:288-293.
15. Arora VK, Gupta R. Trends of extrapulmonary tuberculosis under Revised National Tuberculosis Control Programme: A Study from South Delhi. Indian J Tuberc. 2006;53:77-83.
16. Rai DK, Bisht RS, Sikarwar V, Upadhyay SK. Clinicoepidemiological trends of tuberculosis in garhwal region. IOSR Journal of Pharmacy. 2012;2:39-43.
17. Knut lonnrath, Mario Raviglione. Global epidemiology of tuberculosis: Prospects for control. Semin Respir Crit Care Med 2008;29:481-91.
18. Selami Gunal, Zhenhua Yang, Mansi Agarwal, Riza Durmaz et al. Demographic and microbiological characteristics of extrapulmonary tuberculosis cases diagnosed in Malatya, Turkey, 2001-2007.BMC Public Health 2011;11:154
19. Xinyu Zhang, Aase B Anderson, Troels Lillebaek, ZazaKamper Jorgenson, VibekeOstergaard Thomsen, Karin Ladefoged, Cari F, Marrs, Lixin Zhang, Zhenhua Yang. Effect of sex, age and race on the clinical presentation of tuberculosis:A 15 year population based study Am J Trop Med Hyg 2001;85:285-90.
20. Chandir S, Hussain H, Salahuddin N, Amir M, Ali F, Lotia l:Extrapulmonary tuberculosis:a retrospective review of 194 cases at a tertiary care hospital in Karachi, Pakistan. J Pak med assoc 2010;60:105-9.
21. Andrian O, Jennifer C, Philip CH, Leah C, Gonzalez MW, Robert M J, Charles LD. Molecular Epibemiological Assessment of Extrapulmonary tuberculosis in San Francisco. Clin Infect Dis 2004;3825-31.
22. Memish Ziad Ahmed et al. Incidence of and risk factors associated with pulmonary and extrapulmonary tuberculosis in Saudi Arabia (2010-2011) Ed. Angelo A Izzo. PLos ONE 9.5 (2014):e95654.PMC.Web 5Apr2015
23. Van Zyl-Smit RN, Brunet L, Pai M, Yew WW. The convergence of the global smoking, COPD, Tuberculosis, HIV and respiratory infection epidemics. infect disease clinics of north America 2010;24:693-703.
24. Stefan DC, Kruis AL, Schaff HS, Wessel G. Tuberculosis in oncology patients. Ann Trop Paediatr 2008;28:111-6.
25. Gupta S, Shenoy VP, Bairy I, Srinivasa H, Mukhopadhyay C. Diabetes Mellitus and HIV as co morbidities in tuberculosis patients of rural south India. indian J Infect Public Health 2011;4:140-4.
26. Viswanathan V, Kumpatla S, Aravindalochanan V, Rajan R, Chinnasamy C, et al. Prevalance of Diabetes and pre diabetes and associated risk factors among tuberculosis patients in India. PLoS ONE 2012.7:E41367.

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