 DOI: 10.18231/2456-012X.2017.0014

Study of chest radiography in tubercular cervical lymphadenopathy – A prospective study

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Abstract

Introduction: Even though cervical tubercular lymphadenitis is common in our country, there are few reports on studies regarding its association with lung involvement. This study was carried out with an aim to analyze chest Roentgenography (chest X-ray) abnormalities in FNAC confirmed cases of tubercular cervical lymphadenitis.

Materials and Method: Patients attending the OPD's of Mcgann Teaching District Hospital, Shimoga Institute of Medical Sciences, Shimoga, Karnataka, India, of all age groups and both genders having confirmed tubercular cervical lymphadenitis from June 2016 to June 2017 were included in the study. In all patients history, clinical examination, haemogram, sputum for AFB, FNAC of cervical lymph node with AFB staining and chest X-ray PA view was performed (n=78).

Results: This study has shown that the incidence of tubercular cervical lymphadenitis is more in the age group of 2nd and 3rd decade. Normal chest X-ray was found in 66 cases (84.61%) and abnormal chest X-ray in 12 cases (15.39%). Parenchymal infiltration, the commonest radiological finding was detected in 6 cases (7.69%) and hilar enlargement in 3 cases (3.84%). Pleural effusion, cavitations and miliary mottling was found in one case each (1.28%). Predominance of lung parenchymal infiltrations in upper zones was noted in 33.33%. Single zone was affected in 33.33% cases and multiple zones were involved in 16.66% cases.

Conclusions: This study emphasizes the role of chest Roentgenography in tubercular cervical lymphadenitis which is not being done in routine practice. Chest X-ray should be done in all tuberculous cervical lymphadenitis before categorization and starting of treatment which was enforced in recent Index TB Guidelines for extra pulmonary Tuberculous-2016.

Keywords: Chest X-ray; Cervical lymphadenitis; Tuberculosis

Introduction

Tuberculosis (TB) is the biggest health problem in developing countries [1,2]. Due to worldwide resurgence of tuberculosis, the clinical presentation and diagnostic approach of TB has changed dramatically which was narrated in recent Index TB Guidelines for extra pulmonary TB [3,4]. Cervical lymphadenitis is the commonest form of extra pulmonary TB [2]. It manifests with lymphadenopathy either in single/multiple numbers, usually located in the posterior cervical or jugulo-diagastric region [2]. The specificity of tubercular lymphadenitis is its multiplicity, matting and sinus formation [3]. Cervical tubercular lymphadenitis may be a manifestation of systemic TB or localized extra pulmonary tuberculosis. It can result from either direct extension or haemetogenous spread of mycobacterial infection. Even though, Cervical Tuberculous lymphadenitis is common in our country, there are few reports on associated lung involvement. Our aim is to analyze chest roentgenography (chest X-ray) abnormalities in fine needle aspiration cytology (FNAC) confirmed cases of tubercular cervical lymphadenitis.

Materials and Method

This prospective study was conducted in the Department of General Medicine, Mcgann Teaching District Hospital, Shimoga Institute of Medical Sciences, Shimoga, Karnataka, India, a tertiary care hospital which caters medical services to larger population of Karnataka. The period of study was from June 2016 to June 2017. An ethical committee approval was taken from the institute's ethical committee and a written informed consent was obtained from all the subjects of study.

The cervical tubercular lymphadenitis was diagnosed with the confirmation by fine needle aspiration cytology (FNAC) of affected cervical lymph node of patients attended OPDs of Mcgann Teaching District Hospital, Shimoga. The demonstration of caseating epithelioid granuloma or identification of acid fast bacilli was confirmed by histopathological examination/ZN Staining. These confirmed cases were included in this prospective study. Other non-tubercular causes and those who refused to give consent were excluded from the study. The eligible patients were subjected to detailed history, clinical examination as per the proforma. Complete blood counts with ESR, biochemical tests, Montoux test, sputum for AFB, HIV test including chest X-ray- PA view in each case was performed as per the RNTCP guidelines.

Chest X-ray findings were classified as (1) normal; (2) lung infiltrate; (3) lymphadenopathy presented as hilar enlargement or paratracheal opacity; (4) cavitations; and (5) pleural effusion presented as obliteration of costophrenic angle. Lung infiltrates were classified as (1) single or multiple zonal involvements; (2) unilateral or bilateral infiltration; and (3) isolated

infiltration or complicated infiltration with other abnormality.

Results

Table 1: Age and Sex wise Distribution of Study Population (n=78)

Age in years	No. of cases (%)		
	Male (n=33)	**Female(n=45)**	**Total (n=78)**
<15	3 (3.84%)	2 (2.56%)	5 (6.40%)
15 to 30	14 (17.94%)	24 (30.76%)	38 (48.71%)
30 to 45	13 (16.66%)	14(17.94%)	27 (34.64%)
45 to 60	2 (2.56%)	3 (3.84%)	5 (6.4%)
>60	1(1.28%)	2 (2.56%)	3 (3.84%)
Total	33(42.30%)	132 (57.70%)	78 (100%)

Table 2: Cases distribution according to Radiological Abnormalities in Chest Roentgenography (n=12)

Affected Area in Chest X-Ray	**Chest X-Ray Abnormalities (N=12; 15.38%)**				
	Parenchymal infiltrate (n=6; 7.69%)	**Lymphad-enopathy (n=3; 3.84%)**	**Pleural effusion (n=1; 1.28%)**	**Cavitation (n=1; 1.28%)**	**Miliary mottling (n=1; 1.28%)**
Right lung (n=4; 33.33%):					
Upper zone	2 (16.66%)	-	-	-	-
Mid zone	1 (8.33%)	-	-	-	-
Lower zone	1 (8.33%)	-	-	-	-
Left lung (n=2; 16.66%):					
Upper zone	2 (16.66%)	-	-	-	-
Mid zone	0 (0%)	-	-	-	-
Lower zone	0 (0%)	-	-	-	-
Both lungs (n=0; 0%)	0 (0%)	-	-	-	-
Complicated infiltration (n=3; 24.99%)	3 (24.99%)	-	-	-	-
Lymphadenopathy (n=3; 25%):			-	-	-
Hilar (n=3; 25%)			-	-	-
(i) Only right		2(16.6%)			
(ii) Only left		1(8.33%)			
(iii) Bilateral		0 (0%)			
Paratracheal opacity (n=0; 0%)					
Pleural effusion (n=1; 8.33%)			1		
Cavitation (n=1; 8.33%)				1	
Miliary mottling *(n=1; 8.33%)*					1

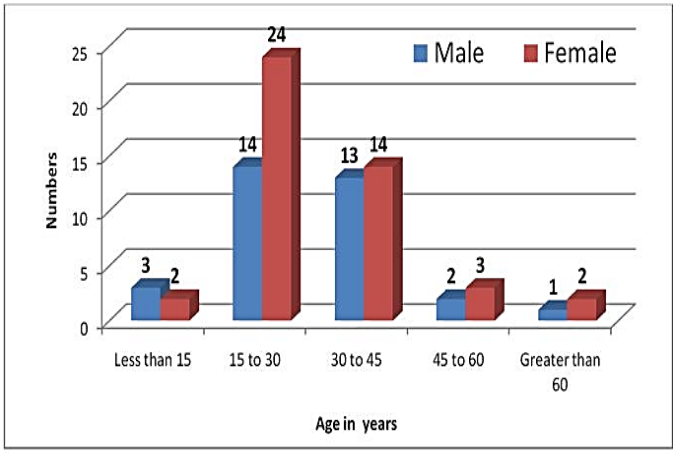

Fig. 1: Bar diagram showing age and sex wise distribution of study population (n=78)

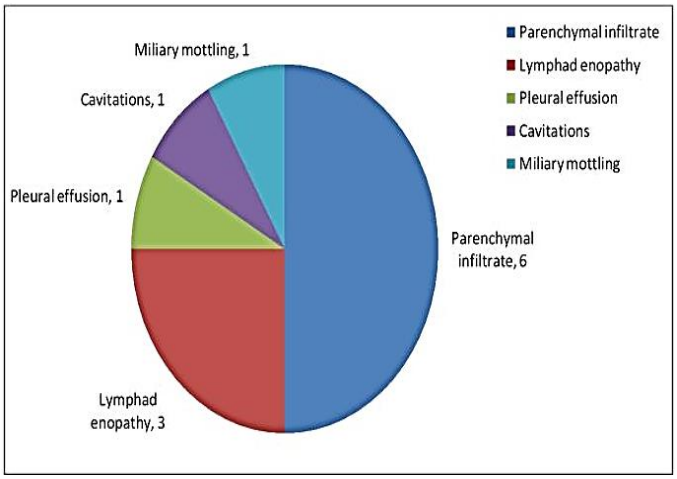

Fig. 2: Pie chart showing chest x-ray abnormalities

Out of 78 patients, 45 (57.7%) were female and 33 (42.3%) male, and 1.36:1 was the female to male ratio. Majority of patients were between 15 to 45 (83.33%) years (Table 1 & Fig. 1). Solitary cervical lymph node enlargement was found in 28 cases (35.9%) and most of them were in upper cervical region. Multiple lymph node enlargements were noted in 44 cases (56.4%), and of them 23 (52.27%) were matted. Sinus formation was found in 1 case (1.28%). Cervical lymphadenopathy was right sided in 34 cases (43.59%), left sided in 19 cases (24.35%) and bilateral in 25 cases (32%). FNAC of the affected cervical gland showed caseating granuloma in 72 cases (92.3%). FNAC smears were positive for AFB staining in 23 cases (29.48%). In two cases diagnosis was established by excision biopsy and histo-pathological examination.

Normal chest X-ray was detected in 66 patients (84.61%) and abnormal chest x-ray was found in 12(15.39%) patients (Table 2). Lung infiltration was the commonest radiological finding, and was found in 6 (7.69%) patients. Lymphadenopathy presented as hilar opacities was found in 3 patients (3.84%). Pulmonary cavity was found in 1 patient (1.28%). Right side mild pleural effusion and military mottling was found in 1 case each (1.28%). Distribution of lung infiltrations showed upper zonal predominance, found in 4 (33.33%) patients, followed by mid and lower zonal infiltration in one case each (Fig. 2).

Single zone involvement was found in 4 patients (33.3%), two zones were involved in 2 patients (16.66%). Right lung was involved in 4patients (33.33%), left lung was involved in 2 patients (16.66%). Complicated pulmonary findings noted in 3 patients and of them 1 had cavities, 1 had pleural effusion and 1 had miliary mottling. Right hilar opacity was noted in 2 patients (16.66%), left hilar lymphadenopathy was noted in one patient (8.33%).

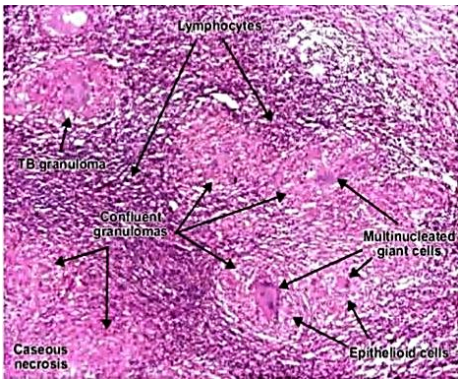

Fig. 3: Photomicrograph showing Caseating Epitheloid Granuloma with central necrosis

Fig. 4: Chest x-ray PA view showing right upper and middle zone infiltration

Discussion

The occurrence TB is being increased in developing countries along with Cervical Tuberculous lymphadenitis [1]. Even though cervical TB lymphadenitis is the commonest form of extra pulmonary Tuberculosis where lung is the primary site, it is assumed that chest x-ray was not warranted unless patient is having chest symptoms. But recent Index TB Guidelines has made mandatory to include chest x-ray, sputum AFB, HIV, etc. in all cases of extra pulmonary TB [4].

Cervical tubercular lymphadenitis is commonest in young age group and females [5]. Matted multiple/single lymphadenopathy with or without fistula / sinus formation are the prominent features of TB [6].

The clinical differentiation of lymphadenopathy regarding etiological causes may be misleading. The confirmation TB lymphadenitis is usually performed by FNAC / open biopsy of affected lymph node for demonstration of caseating epithelioid granuloma by histopathological examination (Fig. 3) and /or AFB smear of the tissue. The sensitivity and specificity of FNAC in diagnosis of tuberculous lymphadenitis were found to be 88% and 96% respectively [7].

In this study we made an attempt to compare results of different studies of south Asian developing countries like India, Pakistan and Bangladesh.

In our present study, female to male ratio was 1.36: 1, confirming cervical tubercular lymphadenitis is more common in females and is consistent with other studies like Desa et al., Bhattacharyya et al. [6,9].

In patients with cervical tubercular lymphadenitis, abnormalities in chest X-ray may be classified as lung parenchymal, lymphadenopathy and pleural effusion [9].

In TB cervical lymphadenitis, chest x-ray may show abnormalities in 14 to 20% of cases [8]. In our study chest X-ray abnormalities were found in 15.39% of patients. In Bhattacharyya et al study, abnormal chest x-ray was present in 27.87% of cases [9]. In Jha et al study, chest lesions were in present in 16% of patients [10]. In Bayazit et al study, chest abnormalities were present in 14% cases [8]. In Magsi et al study, 7.5% of the patients had chest abnormalities [11]. In Kamal et al [12] study chest X-ray abnormalities was present in 3.1%.

In present study, lung parenchymal infiltration (7.69%) (Figure 4) was the predominant abnormality followed by hilar lymphadenopathy (3.84%) consistent with Bhattacharyya et al study [9].

It is well known that TB lung infiltration is common in upper zone. In our study upper zone infiltration was present in majority of cases which is consistent with Bhattacharyya SK et al study [9].

Conclusions

In our study the confirmation of hypothesis that chest X-ray in apparently respiratory asymptomatic patients with tubercular cervical lymphadenopathy might reveal the abnormalities consistent with active pulmonary tuberculosis was emphasized. So it is wise to consider chest X-ray in all case of cervical tuberculous lymphadenitis irrespective of respiratory symptoms as suggested in recent Index TB Guidelines for Extra Pulmonary Tuberculosis-2016.

Conflicts of interest: None declared

Acknowledgements: None

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