

Clinical and epidemiological profile of tubercular cervical adenitis: A multi-centric hospital based descriptive study

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Abstract

Introduction: Tuberculosis is a huge public health worry with high mortality rate. Usually presents with non- tender lumps in the neck region, malaise and weight loss. This study was undertaken to study the clinical and epidemiological profile of tubercular cervical adenitis.

Objective: To study the clinical and epidemiological profile of tubercular cervical adenitis and to determine and assess the outcome of anti- tuberculous treatment (ATT) in these patients.

Methods: A hospital based descriptive study was conducted among 35 subjects at a tertiary teaching hospital in Hyderabad for a period of one year. The collected data was analysed using SPSS version 21.

Results: The mean age was 31.1±12.8 years consisting of 13 males and 22 females. The swelling was tender in only one subject, hard in 74.3% and firm in 25.7%. FNAC was done in 94.3% and biopsy was done in 11.4%. All the 35 subjects were started on anti- tubercular treatment category I. Relapse was seen in 3 subjects. On association anti tubercular treatment of tubercular cervical adenitis increased the cure rate ($p<0.04$) and the chances of relapse was reduced ($p<0.001$).

Conclusion: High- cure rate and low relapse rate was observed with minimal adverse effects.

Key words: Biopsy, Cervical adenitis, FNAC and Tuberculosis

Introduction

A major public health concern that significantly increases morbidity and mortality in developing countries is tuberculosis (TB) ^[1, 2]. Around 9.6 million people worldwide contract TB each year, and 1.5 million die from it ^[3]. Nearly every organ and tissue in the body can become infected with TB, which mostly affects the lungs. To get to the extra-pulmonary organs, the bacilli travel through the bloodstream and lymphatic system. The pleura, central nervous system, lymphatic system, genitourinary system, and musculoskeletal system are significant extra-pulmonary infection sites ^[4]. Extra-pulmonary TB (EPTB) accounts for 15% to 20% of all cases of TB, with tuberculous lymphadenopathy accounting for 35% of all instances of EPTB ^[5, 6, 7, 8]. The cervical lymph nodes are the most typical site for TB lymphadenopathy, accounting for 60 to 90% of cases and making diagnosis difficult ^[5]. In areas where TB is endemic, lymph node tuberculosis (LNT) is a frequent cause of lymphadenopathy. LNT is the most prevalent extrapulmonary type in nations with low TB incidence.

According to Kent and colleagues, lympho-hematogenous transmission of pulmonary tuberculosis is the cause of CTL^[9]. Powell further claims that this condition is a hyper-reaction of the lymph nodes to prior pulmonary tuberculosis^[10]. Yew *et al.* hypothesised that the lymphatics of the right lung and the lower lobe of the left lung often drain to the right supraclavicular lymph nodes before ascending to the right lower cervical chain as the primary pathway of the transmission of the tubercle bacilli to the cervical lymph nodes^[11]. While being treated, Tb lymphadenitis can present a number of difficult conditions, including the growth of newly involved nodes, expansion of the existing nodes, fluctuation, the advent of sinus tracts, residual lymphadenopathy after therapy is finished, and relapses. Although there is research on many different elements of this disease, there haven't been many new investigations on the clinical pattern of the condition. So, the objective of this study was to investigate the epidemiological and clinical characteristics of tubercular cervical lymphadenitis. Hence the present study was aimed to study the clinical and epidemiological profile of tubercular cervical adenitis and to determine and assess the outcome of anti-tuberculous treatment (ATT) in these patients.

Materials and Methods

Study Area: The study was conducted among patients attending department of pulmonology of a tertiary teaching hospital, Hyderabad.

Study Design: Hospital based descriptive study

Study Period: January 2022 to December 2022

Ethical approval: Institutional ethical committee approval was obtained prior to the initiation of the study

Study Population: Patients with tubercular cervical lymphadenitis presenting to DOTS Centre of department of pulmonary medicine (in and out patient).

Inclusion Criteria

1. Both the sexes of all age groups
2. Patient newly diagnosed TB cervical adenitis either by histopathology or cytology or CBNAAT or AFB staining or clinical suspicion.

Exclusion Criteria

1. Patients already on anti-tubercular treatment
2. Withdrawal criteria if any
3. Rescue criteria if any

Sampling technique: Consecutive sampling

Study Tools: Pre-designed pre-tested questionnaire

Sample Size

All patients diagnosed with TB cervical adenitis during the study period were included in the study. Sample size was calculated assuming the proportion of individuals with TB cervical lymph adenitis having paradoxical reactions in last the 6 months post ATT as 20%, an alpha error of 5% and considering 20% relative precision the sample size worked out to be 160. As per the statistics of the hospital's pulmonary medicine OPD, number of cases of TB lymph adenitis seeking treatment per year is around 160. Among the 160 cases as cervical tuberculosis contributes 20% a total of 35 cases were taken into the study

Data collection

The subjects were included in the study after their consent socio-demographic details were noted. History was taken from patients and attenders. Important history regarding site of the disease, diagnostic methodologies including fine needle aspiration cytology, excision biopsy, fluorescent microscopy of lymph node aspirate, Cartridge based nucleic acid amplification test (CBNAAT), Mantoux test, Chest x ray were noted. The patients were started on anti-tubercular treatment and followed up every two months till completion of treatment. After six months of completion of ATT they will be followed up every 3rd month for a year post treatment. If lymph node persists at the end of six months of treatment, the initial diagnosis will be revisited and the lymph node is subjected to gene expert or identification of non-tubercular mycobacteria by polymerase chain reaction.

Data analysis

The collected data was collected, coded, entered into Microsoft excel work sheet and exported to SPSS. Data was analysed using SPSS version 21. Data is presented as percentage in categories and then presented as tables and diagrams. Independent test was used for test of significance.

Results

The study consisted of 37.1% males and 62.9% females with the mean age being 32.1 ± 12.8 years. Among the 35 subjects 25.75 were employed, 48.6% were students and the rest were unemployed with 60% being married as seen in Table 1. On examination findings in study population, the hard consistency seen in 74.3% and tenderness in 2.9% only (As shown in Table 2). The signs and symptoms were noted for all the patients were all had swelling, 7 complained of pain, 3 had fever, 5 had loss of appetite and 7 reported to have loss of weight as shown in Figure 1. On examination the swelling was hard in 26 patients and firm in consistency in 9 patients. Tenderness was present in only 1 patient as seen in table 2. FNAC was done for 33 patients and biopsy was done in 4 patients as shown in Table 3. In this study 7 were positive for CBNAAT, 3 had abnormal findings on chest x-ray, the 1 first sputum samples were positive in 2 patients and the second sputum sample too was positive in 2 patients. Sputum for CBNAAT was positive for 2 patients (As shown in Table 4). All the 35 patients were under category I treatment regimen and only 1 had no resistance as seen in Table 5. All the 35 patients were examined post treatment and 4 had lymphnode and 31 did not have any lymphnode (As depicts in Figure 2). All the 35 patients were examined post treatment and 4 had lymphnode and 31 did not have any lymphnode and relapse was seen in 3 patients (Figure 3). The effect of treatment was compared with outcome in terms of cure rate and relapse rate. In the study 31 were cured and 3 had relapse. A significant association was observed between them meaning anti tubercular treatment of tubercular cervical adenitis increased the cure rate ($p < 0.04$) and the chances of relapse was reduced ($p < 0.001$) (As shown in Table 6).

Table 1: Socio- demographic profile of the study population

Socio- demographic profile	Frequency	Percentage
Age	32.1±12.8 years	
Gender		
Male	13	37.1%
Female	22	62.9%
Occupation		
Employed	09	25.7%
Unemployed	09	25.7%
Student	17	48.6%
Marital Status		
Married	21	60.0%
Unmarried	14	40.0%

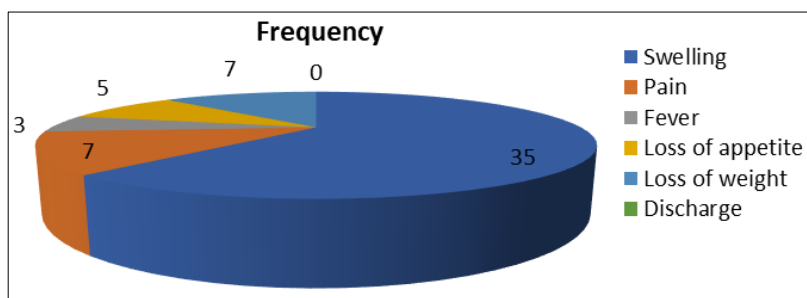


Fig 1: Clinical Signs and Symptoms in study population

Table 2: On examination findings in study population

Examination	Frequency	Percentage
Consistency		
Hard	26	74.3%
Firm	09	25.7%
Total	35	100%
Tenderness		
Yes	01	2.9%
No	34	97.1%
Total	35	100%

Table 3: Distribution according to FNAC and biopsy

FNAC	Frequency	Percentage
Yes	33	94.3%
No	02	5.7%
Total	35	100%
Biopsy		
Yes	04	11.4%
No	31	88.6%
Total	35	100%

Table 4: Investigation findings distribution in study population

Investigations	Frequency	Percentage
CBNAAT		
Positive	07	20%
Negative	28	80%
Total	35	100%
Culture		
Positive	-	-
Negative	35	100%
Total	35	100%
AFB		
Positive	-	-
Negative	35	100%
Total	35	100%
Chest x-ray		
Normal	32	91.4%
Abnormal	03	8.6%
Total	35	100%
Sputum AFB A		
Positive	02	5.7%
Negative	33	94.3%
Total	35	100%

Sputum AFB B		
Positive	02	5.7%
Negative	33	94.3%
Total	35	100%
Sputum CBNAAT		
Yes	02	5.7%
No	33	94.3%
Total	35	100%

Table 5: Distribution according to category of ATT and resistance to ATT

Category	Frequency	Percentage
Category I	35	100%
Category II	-	-
Total	35	100%
Resistance		
Yes	34	97.1%
No	01	2.9%
Total	35	100%

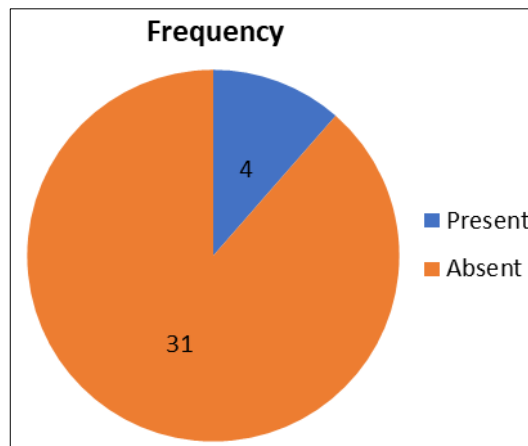


Fig 2: Post treatment examination

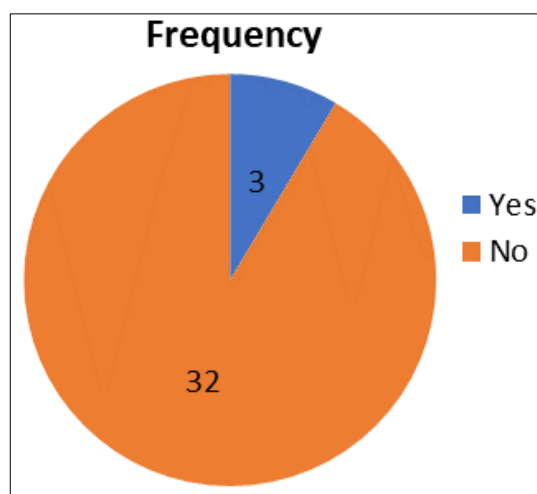


Fig 3: Pie chart showing relapse

Table 6: Association between treatment and outcome

Association	Mean	SD	95% CI		p-value
			Lower	Upper	
Treatment* Cured	0.11	0.322	0.225	0.003	0.04*

Treatment* Relapse	0.91	0.28	1.011	0.816	<0.001*
*Level of significance: $p < 0.05$					

Discussion

The study was conducted among 35 patients presenting with various symptoms especially cervical swellings. The swelling were examined clinically, radiologically and lab studies support for conclusive diagnosis and appropriate treatment to be given. Biopsy and FNAC findings were noted for all and diagnosis were noted. The present study findings were compared with previously done similar studies/ research done by various authors. The disagreement with the present study and other studies were kept to the minimal.

The study by Jayakumar R, Thenmozhi K, Naveen M and Abirami K findings showed the mean age among 36 subjects was 35.3 years and consisted of 26 males and 10 females which is close to the present study subjects' age^[12].

The study by Amol R, and Deepak H consisted of 47 males and 33 females and the maximum numbers of patients were between the age 30 and 40 years which was a similar finding in the present study^[13]. Studies by Pandit A, Candes FP, Khubchandani SR^[14] reported a mean age between 21 and 30 years, Rakhshan M, Rakhshan A^[15] reported the mean age as 26 years and study by Narang RK, Pradhan S, Singh RP, Chaturvedi S reported the mean age of presentation was 25 years^[16].

According to the symptoms

Symptoms	Present study	Previous studies
Fever	20%	Jayakumar <i>et al.</i> reported 10% had fever ^[12] . Amol R and Deepak H study reported 18.7% had fever ^[13] . Desi HV <i>et al.</i> found most of the patients had fever ^[17] . U. Puram <i>et al.</i> reported 60% had fever ^[18] . Nageshwara R <i>et al.</i> study reported 44% had fever ^[19] .
Pain	8.5%	G. Swingler, S. Andronikou <i>et al.</i> suggested pain was present in 12% patients ^[20] .
Weight loss	20%	Jayakumar <i>et al.</i> reported few patients had loss of weight ^[12] . Amol R and Deepak H study showed 7.5% had weight loss ^[13] . Khan R <i>et al.</i> suggested patients presented with loss of weight ^[21] .
Appetite loss	14.2%	Jayakumar <i>et al.</i> reported few patients had loss of appetite ^[12] . Amol R and Deepak H study showed 5% had loss of appetite ^[13] . Desi HV <i>et al.</i> found most of the patients had loss of appetite ^[17] .

Jayakumar R, Thenmozhi K, Naveen M and Abirami K in their study found 66.6% the consistency of the swelling was firm and few the swelling was soft^[12]. Maria J and Robert D study suggested most of the patients swelling were hard, fixed and non- tender^[22]. FNAC appear to be the first line diagnostic technique with high sensitivity and specificity. Biopsy and final diagnosis association was noted and significant in this study which was a similar finding in the study by Jayakumar R, Thenmozhi K, Naveen M and Abirami K^[12]. Jha B C, Dass A^[23] and Dandapat MC, Mishra BM, Dash SP, Kar PK^[24] studies reported and concluded that biopsy is the gold standard for diagnosis with a high sensitivity. Mondal A, Mukherjee D, Chatterjee DN study reported 100% sensitivity and accuracy of biopsy use for diagnosis^[25]. U. Puram, M. Edathikudi and M. Vaipel showed that biopsy / FNAC was the confirmatory investigation of choice^[18].

The study by Cambell *et al* established the success rate was high when the patient was given six months regimen^[26]. The study B Jha, A Dass *et al.* also suggested and reported all the patients were treated successful with the short course therapy of six months^[27]. R and Mehta R^[28] and Yuen A, Wong S *et al.*^[29] also reported similar findings. The study by H. Seok, Kyung H *et al.* reported a relapse rate of 5% and the present study reported a relapse rate of

8.6% ^[30].

Conclusion

The cure rate of 88.6% is a very good positive finding and a significant association being noted between treatment and final outcome with chance of relapse being minimized.

Conflict of interest: Nil

Source of funding: Nil

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