

EVALUATION OF TUBERCULOSIS CERVICAL LYMPHADENOPATHY

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ABSTRACT

Objective: To analyze clinical presentation and diagnosis of tuberculous cervical lymphadenitis (TCL) presented in the ENT department.

Study Design: Descriptive observational study.

Setting & Duration: Department of Otorhinolaryngology - Head and Neck Surgery, Dow Medical College, Civil Hospital Karachi and Dow University of Health Sciences from, March 2008 to April 2009.

Methodology: Patients presenting with cervical lymphadenopathy, with the confirmed diagnosis of tuberculosis were included in the study. The diagnosis of TB was made on the finding of acid fast bacilli on smear examination and/or histological demonstration of caseating epithelioid cell granuloma in the specimen obtained by fine needle aspiration cytology (FNAC) or excision biopsy.

Results: The maximum number of patients belonged to the young age group (68%). Bilateral posterior triangle lymph nodes were the most commonly affected group. In majority of the cases (82%) lymph nodes were multiple and in (72%) glands were matted. Fine-needle aspiration followed by Ziehl-Neelsen (ZN) staining, were able to diagnose in 82% of cases affected with tubercular etiology.

Conclusion: Early diagnosis is the cornerstone of tuberculosis control strategies. FNAC is cheap and acceptable investigation for early identification of patients with high index of suspicion of tuberculosis. It should be offered to all patients before starting the treatment.

KEY WORDS: Cervical Tuberculous Lymphadenopathy, Fine Needle Aspiration Cytology, Excision Biopsy

INTRODUCTION

Man's association with tuberculosis goes back to antiquity. Recent DNA fingerprinting of Mycobacterium tuberculosis complex using the restriction Fragment length polymorphism analysis has suggested that the common progenitor of the tubercle bacilli had evolved around 15-20,000 years ago and was already a human pathogen.¹

Peripheral tuberculous lymphadenopathy is the commonest form of extra pulmonary tuberculosis not

in the Indian subcontinent but also one of the commonest cause of peripheral lymphadenopathy in most countries of Asia and Africa with varying frequency of 43%-56%.²⁻⁴ Cervical glands are the commonest site of involvement.^{2,5} Despite the decline of pulmonary tuberculosis in the western world; the incidence of cervical mycobacterial infections has remained relatively unaffected.⁶ In most instances of cervical lymphadenopathy the Tubercle bacilli gain entrance through the ipsilateral tonsil.⁷ Infection entry through the carious teeth, tonsils or adenoid usually involves the upper deep cervical nodes, where as involvement of lower cervical nodes indicates infection commonly from the apex the corresponding lungs.⁸ TCL is usually confirmed by the histological presence of caseating granuloma and acid fast bacilli.⁹ Atypical mycobacterial lymphadenitis is reported to be less than 1% in South India.⁵ The diagnosis of tuberculosis is based on triads of clinical presentations, radiological findings and laboratory tests. The presentation is not always classical one but varies with age and type of disease pattern as in extra pulmonary tuberculosis including lymphadenitis.¹⁰

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The new automated culture, molecular amplification techniques, improvement in the serology and introduction of novel new techniques like bacteriophage assays have made the same day diagnosis a reality.¹¹ However, most of these new techniques are too expensive and sophisticated to be of any practical benefit to the vast majority of TB patients living in underdeveloped countries like Pakistan for whom an early and inexpensive diagnosis remains elusive as ever.

The aim of this study was to analyze clinical presentation, physical characteristics of enlarged nodes and identifies a reliable method of diagnosis

METHODOLOGY

The study was conducted at Civil Hospital Karachi during the period of March 2008 to April 2009. All patients having cervical lymphadenitis with or without ulcer/sinus/ abscess formation having more than six weeks of duration, with confirmed diagnosis of tuberculous lymphadenitis on microbial and /or histological examination done on the material obtained by FNAC and /or lymph node biopsy by the demonstration of epithelioid granuloma with caseation were included in the study.

Patients in whom the diagnosis of tuberculosis was not confirmed on microbial or histological examination were excluded. A detailed history was taken and physical examination was done. Findings were noted in the pre designed proforma. Examination of lymph nodes included site, number whether matted or discrete, presence of tenderness, mobility, consistency and fluctuation. Baseline investigation included haemoglobin, total leucocytes count, differential counts erythrocyte sedimentation rate. Mantoux test was done by using 2PPD units. An induration of more than 09 mm developed after 48-72 hours was read as positive. Chest x- ray and fine needle aspiration were performed in all cases. The aspirate from the lymph node was subjected to ZN staining for AFB and cytological examination. In case of an inconclusive diagnosis excisional biopsy of the effected lymph node was done and sent for histopathological examination. Diagnosis of tuberculosis was confirmed by demonstration of AFB by ZN staining method and /or by the demonstration of epithelioid granuloma with caseation on cytology/ histopathology examination. Results were expressed in terms of frequency.

RESULTS

It was a descriptive observational study including 50 patients, 29 female and 21 male (1.4:1). The age of the patients ranged from 3 to 54 years. Majority of patients

(68%) were between 11-30 years of age. The duration of cervical lymph nodes enlargement ranged from 6weeks to two years. Maximum number of patients had problem for 7 weeks to 6 months. 39 patients (78%) had no constitutional symptoms but history of low grade fever, sore throat, cough, and weight loss found in 11 patients (22%). History of contact found in 19 patients. Physical characteristics of the lymph nodes are given in Table1. Bilateral involvement seen in 60% (n=30) of patients. Posterior triangle involved in 35 patients (70%), upper deep cervical in 24% and lower deep cervical in three patients. Most of the lymph nodes were < 1.5cm in size; the consistency was firm in 33 patients, sinus seen in three (6%) patients. Examination of the blood revealed microcytic hypo chromic anaemia in 21 patients Abnormal total leucocyte counts was observed in 13 patients while 19 patients had predominant lymphocytosis. Increase in the erythrocytes sedimentation rate of more than 50 mm in 1st hour was observed in 23 patients (46%) of the patients. Mantoux test was positive in 34 and 16 had negative reaction. No changes on chest x-ray were observed in 88% (n=44) of the cases. Presence of hilar glands and parenchyma infiltration were present in 6 patients. 41(82%) cases had confirmed diagnosis on fine needle aspiration cytology. Acid fast bacilli on direct smear were seen in 12 of the specimen. 9 patients (18%) required excision biopsy for confirmation.

DISCUSSION

Tuberculosis is still one of the leading health problems in developing countries, with vast social and massive economic implications. It is the most commonest cause of peripheral lymphadenopathy in most countries of Asia and Africa.⁹⁻¹¹ In Pakistan, tuberculosis is the most

Table I. Physical characteristics of lymph nodes

Characteristics	No. of Cases (%)
Single	9 (18)
Multiple	41 (82)
Matted	36 (72)
Discrete	9 (28)
Firm	33 (66)
Hard	3 (6)
Soft	6 (12)
Tender	7 (14)
Abscess	5 (10)
Sinus	3 (6)

common cause of peripheral lymphadenopathy especially the cervical region.^{10,11} Hussain¹² have found isolated involvement of this region in 70.4% of their patients. In this study 36 patients (72%) were in age group of 11-30 years. Almost same age groups were found in the other studies.^{12,13} Mean ages in white patients are higher than those of Indian origin.⁹ Female were affected more than the males (1.4:1), this finding was consistent with studies conducted in other part of the world and reflect poor nutrition in female population.¹²⁻¹⁴

In 70% of our cases the duration of illness was more than 6 months, Hussain suggested that one can suspect tuberculous etiology, when duration of illness is prolonged.¹²

Lymphadenitis may be the only manifestation of the disease and there may not be associated constitutional symptoms, such as low grade fever, loss of weight, cough or other respiratory symptoms. In this study constitutional symptoms were absent in most of the patients (78%). This finding was also observed in studies carried out by Jha and Rizwan.^{13,14} In this study bilateral cervical lymphadenopathy was seen in 60% of cases, majority were in the posterior triangle. Most of the patients had multiple (82%) lymph nodes. Similar results have also been observed by Hussain and Mansoor.^{12,15} The consistency of the enlarged lymph nodes varied. Matted (72%) and firm nodes were present in majority of patients, similar observations have also been reported in Hussain and Rizwan studies.^{12,14} The disease usually present as a painless lymphadenopathy of the superficial lymph nodes of insidious onset, which may proceeds to abscess and sinus formation, if neglected.¹⁶ In this study sinus formation seen in three (6%) patients. Basakota found 8% of patients were complicated by ulceration /sinus formation.¹⁷ While Campbell found fluctuation in 11% and sinus formation in 7% of their patients.¹⁸

Hematological disturbances are frequently encountered in cases of tuberculosis. Mild anaemia is invariably present, both leucocytosis as well as leucopenia may encountered.⁸ Anaemia in 42% of patients and abnormal total leucocytes counts was observed in 26% of patients. Similar findings were present in the study conducted by Hussain.¹² ESR cannot be considered as a diagnostic tool to start anti tuberculous therapy and supposed to be a non specific marker of chronic disorders has been used to monitor response to treatment.⁸ Erythrocyte sedimentation rate was within normal range in 54% of tuberculous patients. Conventionally, laboratory diagnosis of tuberculosis has been based upon smear microscopy, tuberculin skin test and culture. However; many other different diagnostic techniques have become available in recent years. These are too expensive and sophis-

ticated to be of any practical benefit to the vast majority of poor TB patients.⁸ Tuberculin test has a limited value in clinical work especially in high prevalence areas. A positive test is infrequently followed by disease and a negative test does not exclude active disease.¹⁹ Mantoux test was positive in 68% of patients and found to be useful adjunct to the diagnosis, this finding has been supported in most of the tuberculous patients in a study conducted by Jha.¹³

A definitive diagnosis of tuberculosis is dependent upon the isolation of Mycobacterium tuberculosis by a standard culture, but the main drawback of the culture technique is the long time required for mycobacterial growth to occur.⁸ Culture was not carried out in the present study.

FNAC is a well established diagnostic tool in the assessment of cervical masses. In developing countries where tuberculous infection is common and other granulomatous diseases are rare, presence of granulomatous features on FNAC is highly suggestive of tuberculosis.²⁰ It is found to be a very useful diagnostic tool to identify patients (82%) with tuberculous lymphadenopathy, obviates the need for excisional biopsy in most of the patients. Similar views have been expressed by others.¹²⁻¹⁴ The most reliable indicator of cervical mycobacterial infection is an acid-fast smear from the FNA specimen.²¹ The ZN stain for identification of AFB should be incorporated to increase the diagnostic accuracy of tuberculous lymphadenitis.¹⁴ Mansoor observed 78% positive correlation consistent with an open biopsy and non-conclusive results in 22%.¹⁵ Despite its well-established usefulness in the diagnosis of cervical tuberculous lymphadenitis, FNAC has several limitations in its clinical applications. Since it requires >10,000 organisms /mL, it cannot be used to distinguish between various members of mycobacteria, and its sensitivity ranges between 10-50% depending on the study.¹⁴ In this case, excisional biopsy and subjecting the aspirate for cytological examination is a very useful tool for the diagnosis of cervical tuberculous lymphadenitis. Some studies have suggested amplification of bacterial DNA by polymerase chain reaction (PCR) in diagnosing these remainder cases of tuberculosis. This test is rapid, sensitive and specific and detect fewer than 10 organism in clinical specimen, compared to 10⁵ bacilli /ml necessary for AFB smear positivity.⁸ However, the role PCR in the detection of mycobacteria is not foolproof because its sensitivity for the detection of mycobacteria has been reported to range from 55 to 100%,¹⁴ but specificity remained 95% to 98%, in a developing country the cost associated with such investigation could lead to the likely patient's aversion to such costly investigation modality and treatment thereafter.⁸ In this study PCR

was not done but excisional biopsy was required in 18% of patients for confirmation of TB, which is consistent with the studies conducted by Hussain and Lau.^{12,20} At present no single test is adequate for diagnosis of tuberculosis. There is a dire need for development of newer diagnostic techniques and refinements of existing ones to cater for the particular needs of the resource-poor third world.

CONCLUSION

Tuberculous lymphadenopathy can strongly be suspected in a patient who is young having prolonged history of illness associated with multiple matted lymph nodes in the cervical region. Fine needle aspiration by the experienced pathologist for cytology and acid fast bacilli direct smear is a reliable method found in our patients.

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