

Extrapulmonary tuberculosis in patients with cervical lymphadenopathy

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Abstract

Objective: To determine the frequency of tuberculous lymphadenitis in patients with cervical lymphadenopathy, and to determine the association of tuberculous lymphadenitis with body mass index.

Methods: The descriptive cross-sectional study was conducted at the Department of ear, nose, throat (ENT), Head and Neck Surgery, Post Graduate Medical Institute, Lady Reading Hospital Peshawar, from March, 2010 to February 2011 included 101 patients with enlarged cervical lymph nodes fulfilling the inclusion criteria. Tuberculosis was diagnosed in cervical lymph nodes by fine needle aspiration and open biopsies where needed. Data was collected on a pre-designed proforma and was analysed by SPSS 11.

Results: The study comprised 101 cases with cervical lymphadenopathy: 63 (62.37%) females and 38(37.62%) males, with a female:male ratio of 1.65:1. The age of the patients ranged from 03-67 years with a mean of 32.56 ± 13.49 years. Most of patients (n=77; 76.23%) were from lower socioeconomic group and had low body mass index. The main complaint of these patients was fever (n=35; 34.65%). Extrapulmonary tuberculosis was the commonest diagnosis in cervical lymphadenopathy accounting for 76(75.24%), while reactive hyperplastic lymphadenopathy (n=11; 10.89%) was the next common finding. Rare diseases diagnosed in cervical lymph nodes were Hodgkin's disease 2(1.98%), Non-Hodgkin's lymphoma 2(1.98%), and 1(0.99%) case of Kikuchi's disease. The tuberculous cervical lymphadenopathy was significantly associated with low body mass index ($p < 0.0001$).

Conclusion: Tuberculous cervical lymphadenopathy is a common disease in our society. It is more common in young poor females with low body mass index. Therefore, it is important to have a high index of suspicion for diagnosing tubercular lymphadenopathy.

Keywords: Tuberculosis, Extrapulmonary, Fine needle aspiration cytology, Histopathology, Cervical lymph adenopathy. (JPMA 63: 1094; 2013)

Introduction

Tuberculosis is a disease caused by mycobacterium tuberculosis and is one of the most common infectious diseases in the world.¹ Approximately one-third of the global population is infected with tubercle bacilli; about 9 million new cases of tuberculosis develop each year and about 2 million people die of this disease.² Developing countries, especially those in South Asian region, are having a major burden of tuberculosis.³ In Pakistan the incidence of tuberculosis is estimated to be 181 per 100000 population (0.18%) and each year at least 286000 new cases of tuberculosis are added to the existing population of 1.8 million. In Khyber Pukhtunkhwa (KPK) alone, 36000 new cases of tuberculosis develop annually.² World Health Organization declared tuberculosis as a global emergency in 1993. Tuberculosis can involve any organ system in the body. While pulmonary tuberculosis is the most common presentation, extra-pulmonary tuberculosis (EPTB) is also an important clinical problem.

EPTB constitutes about 15 to 20 per cent of all cases of tuberculosis and almost 50 per cent of concurrent Acquired Immuno-deficiency and tuberculosis.⁸ Cervical lymph node tuberculosis, being the most common manifestation, account for almost 50% of the EPTB cases. Tuberculous lymphadenitis is very high in Asian countries, and Pakistan is ranked 8th among the 22 highest incidence countries and 1st in the eastern Mediterranean region by the WHO.⁵ Cervical glands are the commonest site of involvement. Despite the decline of pulmonary tuberculosis in the western world, the incidence of cervical mycobacterial infections has remained relatively unaffected. In most instances of cervical lymphadenopathy the tubercle bacilli gain entrance through the ipsilateral tonsil. Tuberculous lymphadenitis presents as an enlarging, painless mass in a lymphatic area. The frequency of EPTB in patients with cervical lymphadenopathy is 78.63%.²⁻⁵ Over the last several years, reported EPTB was increasing in absolute numbers and proportion of all reported tuberculosis cases.⁶ Lymphadenitis is the most common form of EPTB in our region. In other local studies conducted on lymphadenopathy, tuberculosis is the commonest etiology, and the most commonly involved group of

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lymph node is cervical lymph nodes, and females with poor physique are frequently the victims.^{3,5} Tuberculosis, being the commonest cause of cervical lymphadenopathy, it is usually underestimated and as the facility of histopathology is available only in a few cities of KPK, most of the patients in the periphery are left out. They present in late stages with advanced disease and complications.⁷

The current study was conducted to determine the frequency of tuberculous lymphadenitis in patients with cervical lymphadenopathy, and to determine association of tuberculous lymphadenitis with body mass index (BMI).

Patients and Methods

The descriptive cross-sectional study was conducted at the Department of Ear, Nose, Throat (ENT) Head and Neck Surgery, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar, from March 2010 to February 2011. It included all patients having cervical lymphadenopathy of more than three weeks duration clinically suspected of tuberculous origin, regardless of age, race and gender bias. Patients having cervical lymphadenopathy with ulcer, and those unwilling to take part were excluded. All these patients had been taking oral antibiotics for cervical lymphadenopathy, but that was not effective and thus these patients presented to the outpatient department (OPD) from where they were selected for recruitment in the study. The study was approved by the hospital ethical committee. After written informed consent for recruitment, a detailed history of cervical lymph node was taken. The lymph node specifically and whole of the patient was examined thoroughly. Mucosal lining of the upper aerodigestive tract was examined. BMI of all patients was calculated using universally accepted formula of BMI for South Asian population $BMI = \text{Mass (kg)} / \text{Height (m)}^2$. All these patients were assessed regarding socioeconomic status and were categorised as lower socioeconomic class having income $\leq$ Rs10,000/ month middle socioeconomic class having income Rs10,000-20,000/ month and upper socioeconomic class having income $\geq$ Rs20,000/month. Routine investigations were performed in all cases. Ultrasonography of the neck swelling was performed to know about its nature, especially to rule out vascular and neurogenic lesion. Only in 3 cases mag resonance imaging (NRI) was performed because ultrasound was not conclusive due to the complex nature. After confirming the neck swelling as cervical lymph node, it was aspirated with 21-gauge needle attached to 20cc disposable syringes under local anaesthesia. All fine needle aspiration cytologies (FNACs) were performed by the same person, and specimens were analysed by the same cytopathologist. Patients whose FNAC results were inconclusive were re-

assessed with open biopsy. Open biopsy was taken under local or general anaesthesia, and the specimen was sent to the same histopathologist for examination. The cost of the procedure was paid by the patients who could afford it, and for the rest, it was arranged from the Zakat Fund. All relevant information was documented on a pre-designed proforma. Statistical analysis was performed using SPSS 11.

Results

The study comprised 101 cases with cervical lymphadenopathy: 63(62.37%) females and 38(37.62%) males, with a female:male ratio of 1.65:1 (Figure-1). The age of the patients ranged from 03-67 years with mean age of 32.56 ± 13.49 years. Most of the patients presented in 2nd and 3rd decades of their lives (Figure-2). In this study 67(66.33%) patients were underweight ($BMI < 18.5$ - 22.9 kg/m^2), patients 23(22.77%) had normal weight ($BMI < 18.5$ - 22.9 kg/m^2) and 11(10.89%) patients were obese ($BMI > 25.0 \text{ kg/m}^2$). The main complaint ($n=35$; 34.65%) of these patients was fever with duration from 1 to 12 months (Table-1). The size of the lymph node ranged from 2-7.2 cm with mean $4.40 \pm 1.93 \text{ cm}$. These lymph nodes presented as 39 (38.61%) on the right side; 11 (10.89%) on left side; 42 (41.58%) on both sides; and 9 (8.91%) of the lymph nodes were situated at midline of the neck. Tuberculosis in cervical lymph nodes was diagnosed in 87(86.13%) FNAC, while in 14(13.87%) cases the reports of

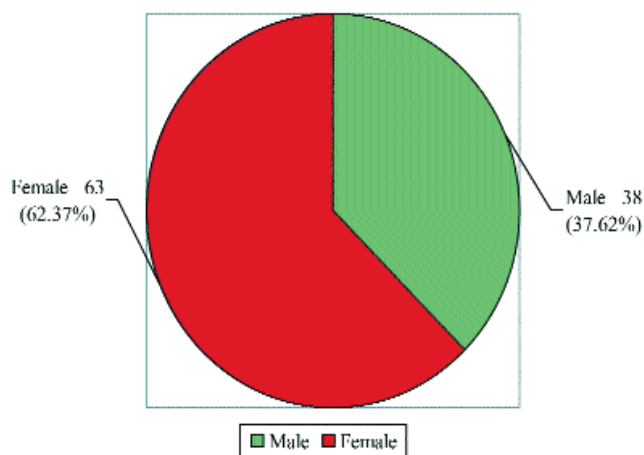


Figure-1: Gender-wise distribution of patients (n=101).

Table-1: Clinical presentations.

Symptoms	No of Patients	Percentage
Fever	35	34.65%
Weight Loss	25	24.75%
Axillary Lymphadenopathy	19	18.81%
Inguinal Lymphadenopathy	8	7.92%

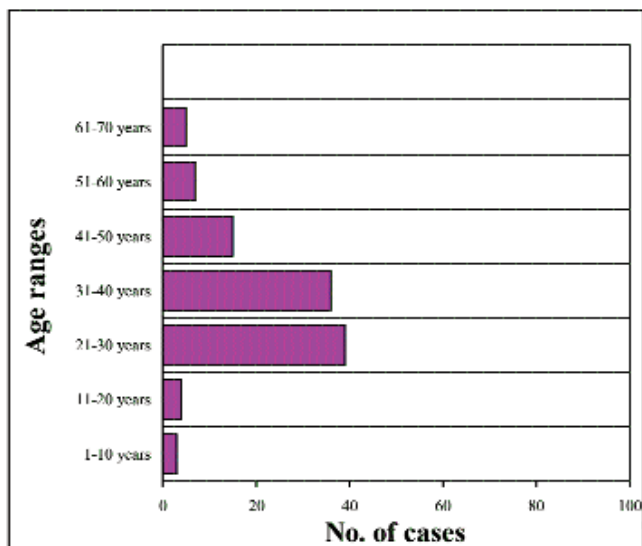


Figure-2: Age-wise distribution of patients (n=101).

Table-2: Correlation between BMI and cervical lymphadenopathy.

	Cervical lymphadenopathy due to tuberculosis	Cervical lymphadenopathy due to other causes	P value
Low BMI	55	6	<0.001
Normal BMI	13	12	0.021
Obese	8	7	0.019

BMI: Body Mass Index.

FNAC were inconclusive. These patients were subjected to tissue biopsy. In 8 (7.92%) cases incisional biopsy was performed, and in 6 (5.94%) cases excisional biopsy was performed to get final diagnosis. EPTB was the commonest diagnosis in cervical lymphadenopathy, accounting for 76(75.24%). The next common finding was reactive hyperplastic lymphadenopathy in 11 (10.89%). In 9 (8.91%) cases, there were metastatic lymph nodes Non-Hodkin's Lymphoma was present in 2(1.98%) cases and 1(0.99%) patient had Kikuchi's disease. Tuberculous cervical lymphadenopathy was significantly associated with low BMI ($p<0.001$) (Table-2).

Discussion

Tuberculosis is primarily considered a pulmonary disease; it has the potential to infect almost every organ system via lymphohaematogenous dissemination during the initial pulmonary infection. Since 1984 the incidence of EPTB has increased at an even faster rate than that of pulmonary tuberculosis.⁸ In the current study, tuberculosis was common in females which was in accordance with earlier results⁹ reporting female: male ratio of 1.4:1,⁹ and 1.7:1 in another studies^{10,11} but in some

of the studies, males were more affected by EPTB, the male:female ratio being 1.5:1.¹² The reason for female predominance is joint family system in our society and females are neglected regarding healthcare. In our study the age of the patients ranged from 03-67 years with mean age of 32.56 ± 13.49 years. Most of the patients presented in the 2nd and 3rd decades followed by the 4th decade, which is comparable to a study where the patients were in the age range 3-54 years.⁹ Similarly, in another study, of Shaikh²³ age of the patients ranged between 10-70 years.¹³ In this study the patients belonged to various groups of life and most of them were from lower socioeconomic stratum of life and majority of the patients (76.23%) had $BMI \leq 18\text{Kg/m}^2$. In one study,¹⁴ most of the patients with EPTB belonged to racial and ethnic minorities with poor socioeconomic level. In the current study, tuberculous cervical lymphadenopathy had strong association with low BMI ($p<0.001$) which is concordant to most of the studies where extrapulmonary tuberculosis was associated with immunodeficient like HIV having low body mass index as reported by Ilgazli.¹⁵ In our study the complaints of the patients with EPTB were fever (34.65%) and weight-loss (24.75%). Similarly, a study reported that cervical lymphadenopathy was the most frequent site involvement of EPTB noted in 246 out of 601 involvements (41%).¹⁶ Like-wise, in another study, symptoms of the patients were neck swelling 53 (94.6%), malaise 10 (17.8%), weight loss 8 (14.3%), fever 6 (10.7%), cough 6 (10.7%), discharging sinus 3 (5.3%) and haemoptysis 1 (1.8%).¹⁷ In this study, tuberculosis in cervical lymph nodes was diagnosed in 87(86.13%) cases by FNAC, while in 14 cases incisional or excisional biopsy were performed to get a final diagnosis. Similarly, one study FNAC was performed in all cases.¹³ In another study FNAC in 58 cases with lymph nodes revealing caseating granuloma in 52 cases (90%).¹¹ By and large pulmonary tuberculosis is a global disease, but EPTB is also not uncommon in human history; especially tuberculosis in cervical lymphadenopathy predominates. Tuberculosis is the commonest cause of cervical lymphadenopathy in young age people and in developing countries, and should be suspected in every case of granulomatous lymphadenopathy unless proved otherwise. In our study, EPTB was the commonest diagnosis in cervical lymphadenopathy accounting for 75.24%. Similar results are available in literature. One study reported that EPTB was the commonest observation in cervical lymphadenopathy i.e. 66.4%.¹⁸ In a study by Rajakaran tuberculosis was detected in 77.3% with cervical lymphadenopathy.¹⁹ The study by Iqbal et al on 220 patients with enlarged neck lymph nodes found that tuberculosis was the commonest (n=155; 70.45%)

finding.²⁰ In a study by Dogru²¹ tuberculosis lymphadenitis was seen in 84.8% patients. In the current study tuberculosis was highest in cervical lymph nodes, but some other diseases were also diagnosed like reactive hyperplastic lymphadenopathy in 11 cases (10.89%), metastatic lymph nodes (5.94%), Hodgkin's disease (1.98%), Non-Hodgkin's lymphoma (1.98%). The rare disease found in this study was Kikuchi's disease (0.99%). This is also in agreement with a national study¹³ which reported that the most common cause of cervical lymphadenopathy was tuberculosis in 99 (49.5%) patients out of 200; and the second most common cause was reactive change which accounts for about 18%; Non-Hodgkins lymphoma (8%); metastatic carcinoma (7%); Hodgkins lymphoma (5%); kikuchi's lymphadenopathy in 1 (0.5%) case. Our results are also comparable to several earlier studies.^{17,22-25}

Conclusion

Tuberculous cervical lymphadenopathy is a common disease in our society. It is more common in young poor females with a low BMI. Therefore it is important that a high index of suspicion for tubercular lymphadenopathy should be kept in mind. FNAC is the investigation of choice though excision biopsy of lymph nodes is required occasionally.

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