

## Tuberculosis in the Head and Neck in India: Down but not yet Dead

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### Abstract

**Background:** The aim of this study was to evaluate the various manifestations of tuberculosis in the head and neck region, incidence of the different forms and the diagnostic modalities and the treatment modalities employed. We also studied its coexistence with pulmonary tuberculosis and human immunodeficiency virus infection.

**Methods:** Our study was a prospective study done conducted in the otolaryngology and head and neck surgery departments, Kasturba medical college and allied hospitals in Mangalore, India. The study group comprised 70 patients diagnosed with tuberculous manifestations of the head and neck region over the period of 2 years from 2011-2013. Chest radiography and sputum AFB was also done in all the patients to rule out coexisting pulmonary tuberculosis. All patients were screened for HIV.

**Results:** Our study included 70 patients with tuberculosis of the head and neck region. The most common presentation of tuberculosis in the head and neck region was tuberculous lymphadenitis in 77% followed by deep neck space abscess 10% then laryngeal tuberculosis in 8.50%, submandibular gland tuberculosis in 3% and 1.5% diagnosed with pharyngeal tuberculosis. 12.8% of our patients had coexisting HIV infection and 33% patients had associated pulmonary tuberculosis.

**Conclusions:** Tuberculosis of the head and neck region though not very frequent, still remains an important clinical entity which should be kept in mind especially in developing countries. Involvement of the cervical lymph nodes remains one of the commonest manifestations.

**Keywords:** Tuberculosis; Head and neck; Lymphadenitis

### Introduction

Although the incidence of pulmonary tuberculosis has been reducing, the proportion of extra pulmonary tuberculosis is on the rise [1]. This proportional rise in extra pulmonary tuberculosis has been associated with the HIV co-infection, because HIV patients are more susceptible for reactivation and dissemination of the tuberculosis infection.

Tuberculosis of the head and neck region comprises about 10% of all the cases of extra-pulmonary tuberculosis [2] and cervical lymph nodes are the most commonly affected 3 followed by laryngeal tuberculosis, deep neck space abscess and tuberculous otitis media [3].

Here we review our experience of tuberculous manifestations in the head and neck region, a condition that can present diagnostic and therapeutic challenges.

With improvement in economic and social conditions and the use of effective anti-tubercular therapy, there is decline in tuberculosis reported for several decades. It is now seen that extra-pulmonary presentations form a major proportion of new cases, especially since the advent of the acquired immunodeficiency syndrome epidemic. Therefore, it is important that otolaryngologists are aware of tuberculosis in the head and neck region and its varied manifestations. We report the increased incidence of head and neck tuberculosis, its various presentations and clinical manifestations over a two year period.

### Materials and Methods

Our study was prospectively conducted in the otolaryngology and head and neck surgery departments, Kasturba medical college and allied hospitals in Mangalore, India. The study group comprised 70 patients diagnosed with tuberculous manifestations of the head and neck region over the period of 2 years from 2011-2013. Age was not

a bar and both male and female patients were included in the study.

Patients with tuberculous manifestations of the head and neck region diagnosed after relevant investigations like fine needle aspiration cytology, pus culture and sensitivity and histopathological examination of the biopsied specimen or excised specimen, were included in the study. Fine needle aspiration cytology was done in patients with persistent swelling of more than two weeks. Cytological findings like presence of caseation necrosis or presence of Acid Fast Bacilli (AFB) were considered as positive findings for the diagnosis of tuberculosis in FNAC. Direct laryngoscopy and hypopharyngoscopy with biopsy was performed in patients, who presented with laryngeal symptoms and with abnormal endoscopic findings of the larynx. Computed tomography scans (CT) and ultrasonography of the affected site was performed as necessary.

From all these selected patients, a detailed history including exposure to active case of pulmonary tuberculosis was obtained and clinical examination was performed. Chest radiography was also done in all the patients to rule out coexisting pulmonary tuberculosis. All patients were screened for HIV.

On confirming the diagnosis, all the patients were treated with anti tubercular drugs. Few patients needed conservative surgery followed

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Received February 04, 2014; Accepted March 24, 2014; Published March 29, 2014

**Citation:** Pandurang K, Shenoy VS, Bhojwani K, Alva A, Prasad V, et al. (2014) Tuberculosis in the Head and Neck in India: Down but not yet Dead. J Mycobac Dis 4: 148. doi:10.4172/2161-1068.1000148

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by anti tubercular treatment. Patients with coexisting HIV were treated with anti-retroviral therapy in addition to anti tubercular therapy.

Data was analysed using fishers exact test and p value less than 0.05 is considered as significant.

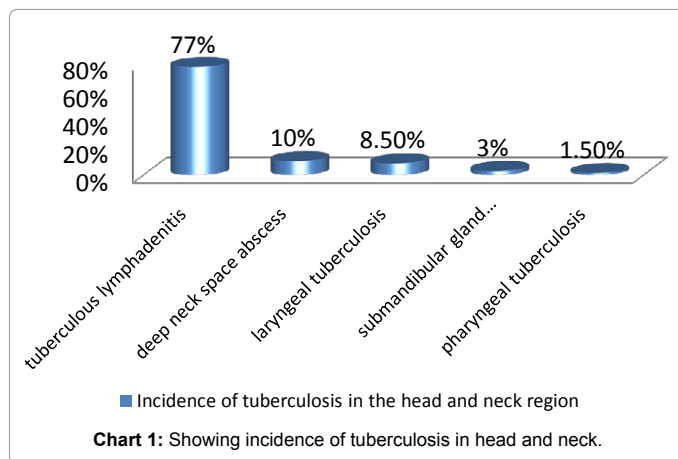
## Results and Observations

The study includes 70 cases with tuberculosis of the head and neck region. 49 patients (70%) were males and 21 (30%) were females. The age group of the patients ranged from 17 to 60 years, 23 patients (32.9%) were in the age group of 31-40 years, 20 patients (28.6%) were in the age group of 41-50 years, 12 (17.1%) were in the age group of 51-60 years, 12 patients (17.1%) were in the age group of 21-30 years and 3 patients (4.3%) were in the age group of 20 years and below.

The most common localization of tuberculosis in the head and neck region was observed to be cervical lymph nodes (77%) followed by deep neck space abscess (10%) then laryngeal tuberculosis (8.50%), 3% constitutes submandibular gland tuberculosis and 1.5% constitutes pharyngeal tuberculosis (Chart 1).

Of the 70 patients, 58 patients (82.9%) presented with neck swelling, 6 (8.6%) patients presented with difficulty in swallowing and 6 patients (8.6%) presented with change in voice ranging from vocal fatigue to complete aphonia (Table 1). 12.8% of our patients had coexisting HIV infection and 33% patients had associated pulmonary tuberculosis (Tables 2 and 3).

In the following paragraphs, we present and discuss the patients according to the region of the head and neck affected.



Presenting Complaint	Frequency	Percentage
Neck Swelling	58	82.9%
Change in voice	6	8.6%
Dysphagia	6	8.6%

Table 1: Presenting complaints.

Diagnosis	Frequency
Tuberculous lymphadenitis	17/54
Laryngeal tuberculosis	3/6
Deep neck space abscess	2/7
Submandibular gland tuberculosis	0/2
Oropharyngeal Tuberculosis	1/1
Total	23/70; (33%)

Table 2: Incidence of Coexisting Pulmonary Tuberculosis.

Diagnosis	Frequency
Tuberculous lymphadenitis	6/54
Laryngeal tuberculosis	1/6
Deep neck space abscess	2/7
Submandibular gland tuberculosis	0/0
Oropharyngeal tuberculosis	0/0
Total	9/70, (12.8%)

Table 3: Incidence of HIV.



Figure 1: Showing Tuberculous lymphadenitis.

### Tubercular lymphadenitis

Out of 70 cases, 54 patients were diagnosed as having tuberculous lymphadenitis (77%). 36 patients were males and 18 were females. Most of these patients presented with discrete cervical node swelling (46 patients), 5 patients presented with matting of the lymph nodes and 3 patients with ulceration and discharge. The most commonly involved lymph node group was the upper jugular. 6 patients (11%) were HIV positive diagnosed with enzyme linked immunosorbent assay (ELISA), p value-0.370, not significant. Among 54 cases, 17 (31.4%) were diagnosed as having co-existing pulmonary tuberculosis diagnosed with chest radiography, early morning sputum AFB, p value-0.356, not significant (Figure 1).

Fine needle aspiration cytology was performed in all cases, in 5 patients FNAC report came as non-specific lymphadenitis, these patients were started on antibiotic course and were followed after two weeks to see the size of the node, those cases that did not respond with antibiotic therapy excision biopsy was performed, histopathological examination suggestive of tuberculous lymphadenitis. All patients were started on anti tubercular therapy.

### Deep neck space abscess

7 patients were diagnosed as having tubercular deep neck space abscess. Among these 4 was retropharyngeal space abscess, 2 were parapharyngeal space abscess and 1 with submental space abscess. 5 were females and 2 were males. 6 patients presented with dysphagia and 1 patient with neck swelling. 28.6% of patients of deep neck space abscess were HIV positive. 28.6% of patients of deep neck space abscess had co-existing with pulmonary tuberculosis, p value-0.356, not significant. Computed tomography scan was done as required. All patients underwent incision and drainage followed by anti tubercular therapy (Figures 2 and 3).

### Tubercular laryngitis

Of the 70 cases, 6 cases (8.5%) had tubercular laryngitis. 50% of these patients had co-existing pulmonary tuberculosis. These patients presented with hoarseness of voice ranging from vocal fatigue to complete aphonia. 2 patients had associated odynophagia. True vocal



Figure 2: Showing Incision and Drainage of parapharyngeal space.



Figure 3: Showing CT Neck showing parapharyngeal and retropharyngeal space abscess.

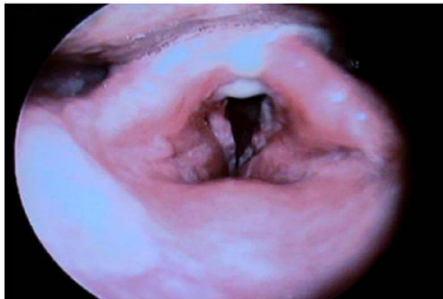


Figure 4: Showing Tuberculous laryngitis.

folds were involved in 4 cases and 2 patients interarytenoid region was involved. 1 patient was HIV positive. All patients were started on antitubercular therapy (Figure 4).

### Salivary gland tuberculosis

Of the 70 cases, 2 cases (3%) had submandibular salivary gland tuberculosis. Both were males. They presented with neck swelling associated with pain. Ulstrasonography of the neck was done. These patients underwent submandibular gland excision. The histopathological examination of excised tissue was suggestive of tuberculosis. Post operatively both were started on antitubercular therapy.

### Discussion

Tuberculosis was thought to affect lungs primarily; but tuberculosis of the head and neck region is also common, especially in developing countries. High index of suspicion is required for the diagnosis of the head and neck tuberculosis because unrecognized, neglected and delayed treatment is potentially lethal and is an epidemiological threat.

In our study, for the whole group the male to female ratio was 2.3:1; when we analyzed the male to female ratio in each group, this ratio was further higher in tuberculous lymphadenitis, laryngeal tuberculosis and submandibular tuberculosis. This was in contrast to observations by K. Akbar khan et al. [3], where they noticed that tuberculous involvement of the cervical lymph node commonly affects females more than males. In our opinion this is due to additional risk factors like smoking and alcohol abuse, both of which are more prevalent in men in our country. For all the patients, the mean time that had elapsed between the onset of symptoms and hospitalization was 4 weeks and it was longest in the group of tuberculous lymphadenitis.

Tuberculous involvement of the cervical lymph nodes was the commonest site in our study. Most of the cases presented as a non tender, small to moderate size, firm mass on the neck. We found that majority of these patients (98%) had unilateral disease with single group of lymph node involved; most commonly the deep jugular lymph nodes. In our study, the posterior triangle cervical lymph nodes is also the common site of involvement for tuberculosis infection; according to Antoni et al. [4], posterior triangle cervical lymph nodes is not the common localization for tuberculosis, they did not find any case of posterior lymph node tuberculosis.

Fine needle aspiration cytology (FNAC) is a sensitive, specific and cost effective way to diagnose tuberculous lymphadenitis. In our study FNAC could diagnose 96% of patients of tuberculous lymphadenitis; in the rest 4% of patients FNAC report came as non-specific reactive lymphadenitis, these patients were started with course of antibiotic and were followed after 2 weeks to see the size of the node; those cases that did not respond with antibiotic course, excision biopsy was done and histopathology report suggestive of tuberculosis. For this reason we agree with the other studies like Maharajan et al., [5] that excision biopsy is the most reliable and confirmatory method for the diagnosis of the tuberculous lymphadenopathy.

Deep neck space abscess was the second common localization of head and neck tuberculosis in our study; but according to Choudhury et al. [6], laryngeal tuberculosis is the second common localization followed by deep neck space abscess. Deep neck space abscess is life threatening because of possibilities of airway obstruction, spread in to mediastinum, involvement of carotid sheath, septic shock. The mortality rate of patients with such life threatening complications is as high as 40-50%. Early diagnosis is crucial to prevent these life threatening complications. Deep neck space abscess is common in first three decades.

Tuberculous retropharyngeal abscess is often secondary to chronic tuberculosis of the cervical spine [7]. In our study 4 patients of retropharyngeal abscess presented with fever, dysphagia, and throat pain with duration of symptoms ranging from 4 days to 15 days. Contrast enhanced computed tomography is the most reliable and accurate investigation for the diagnosis of the abscess and extension. CECT scan finding of central low density area with peripheral ring enhancement indicates the presence of abscess. Open drainage through cervical incision for the retropharyngeal abscess is not normally necessary; but the involvement of the other deep neck space compartments is an indication for the external drainage. In our study 3 patients of retropharyngeal abscess underwent intraoral drainage and in the other patient external drainage through cervical incision was done, as abscess was extending into the mediastinum.

According to Agarwal and Bais [8] the greatest incidence of laryngeal tuberculosis is in young adults between 20 to 30 years of age;

however in our study all laryngeal tuberculosis patients were in the age group of fourth and fifth decade. Laryngeal tuberculosis is common in males in our study, which was also the case in the study of Yvette et al. Previously it was thought that laryngeal tuberculosis affects posterior part of the larynx (interarytenoid area); this was thought to be due to pooling of infected sputum in the posterior part of the larynx in recumbent position [9]. In our study vocal cords were most commonly affected followed by interarytenoid area. This may be due to lymphatic and hematogenous spread.

In our study, among the 6 cases of laryngeal tuberculosis, 3 patients had co-existing pulmonary tuberculosis (50%), which is statistically not significant. This suggests that laryngeal tuberculosis need not always occur secondary to pulmonary tuberculosis. The same results were obtained in the study by Yvette et al. Among 6 patients of laryngeal tuberculosis, 1 patient was positive for HIV. But according to Antoni et al. [4], laryngeal tuberculosis is more common in immunocompromised patients.

Tuberculosis of the salivary gland is common in low socioeconomic group, immunocompromised, malnourished and in endemic area. In our study both patients of submandibular salivary gland tuberculosis, presented with complaints of swelling in the submandibular region. Both were males. Ultrasonography of the neck was done in both patients. As a rule surgery should be avoided in cases of swellings suspicious for tuberculosis; but because of its atypical presentation surgery could not be avoided in most of the cases [10]. In our study both patients underwent excision biopsy and the histopathological report came as tuberculosis.

Aural tuberculosis usually affects children and young adults. The typical features are painless otorrhea, pale granulation tissue, and profound hearing loss disproportional to symptoms. Recent days, aural tuberculosis became very rare.

Computed tomography and magnetic resonance imaging demonstrate the exact location, extent of the infection. In the early stages of tuberculous lymphadenitis, nodes appear as well defined, enlarged lymphnodes with homogenous contrast enhancement. Later, the nodes are matted with central low attenuation on CT and iso or hypointense on T2-weighted imaging [11].

On imaging, laryngeal tuberculosis appears as bilateral diffuse thickening with or without focal mass. Destruction of laryngeal cartilages is rarely seen [11]. A high index of clinical suspicion and imaging characteristics are essential for the diagnosis of tubercular lesions in the head and neck region [12].

We observed a changing trend in the presentation of the patients with extra-pulmonary tuberculosis and coexisting pulmonary tuberculosis. These patients presented to us with extra-pulmonary tuberculosis features without any symptoms suggestive of pulmonary tuberculosis; during evaluation of these extra-pulmonary tuberculosis patients, presence of co-existing pulmonary tuberculosis was revealed.

## Conclusion

Tuberculosis of the head and neck region though not very frequent, still remains an important clinical entity which should be kept in mind especially in developing countries. Involvement of the cervical lymph nodes remains one of the commonest manifestations.

Fine needle aspiration cytology has proved to be very valuable investigation in the diagnosis of the tuberculous lymphadenitis. Tuberculosis of the head and neck region need not to occur always secondary to pulmonary tuberculosis.

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