



## Laryngeal Tuberculosis Not Uncommon in the Present Era

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### Abstract

**Background:** Laryngeal tuberculosis is one form of extrapulmonary tuberculosis which is rare having an incidence less than one percent. However in the present era where the disease is rampant in our developing country, we are still witnessing this rare form of tuberculosis which still poses a clinical and diagnostic challenge and highly mistaken for other diseases. High index of suspicion is important especially in our country where there is high incidence of tuberculosis, with extra pulmonary TB showing atypical presentation.

**Methodology and Results:** This is a retrospective case series of patients with laryngeal tuberculosis who presented to us with a change in voice as the main symptom. Upper GI scopy/Bronchoscopy are carried out in these groups of patients due to high index of suspicion of malignancy contributed by the local habitual food habits (smoking, tobacco consumption, smoked foods items). We found 6 patients with laryngeal ulcers and growth where the histopathological biopsy and ABF staining was suggestive of laryngeal tuberculosis. All patients were started on antitubercular medicine, under the Revised National Training Control Programme (DOTS and DOTSPUS as per the category).

**Conclusion:** In the present era, laryngeal tuberculosis should be one of the differential diagnoses in any patient presenting with symptoms affecting the voice box. Multidrug resistant tuberculosis with laryngeal involvement should also be looked into in those patients treated for pulmonary tuberculosis. Histopathological and bacteriological demonstration of the bacilli is the backbone in diagnosing laryngeal tuberculosis.

**Keywords:** Tubercular laryngitis; laryngeal tuberculosis; Hoarseness; Pulmonary tuberculosis; Acid fast bacilli

### Introduction

Laryngeal tuberculosis is one of the extrapulmonary tuberculosis affecting different parts of the larynx with or without pulmonary involvement. Before the pre antibiotic era, laryngeal tuberculosis is found to be commonly associated with pulmonary tuberculosis with high incidence, however after the effective antitubercular medication the incidence of laryngeal tuberculosis had decreased to less than one percent [1,2]. However with the recrudescence of tuberculosis and development of multidrug resistant tuberculosis, the disease is changing its manifestations with the laryngeal structures being affected producing lesions similar to malignancy, which requires a pathological evaluation to prove the presence of the disease. Being an uncommon site of involvement, in most cases it is often mistaken for malignancy and laryngeal tuberculosis is rarely considered. In our study we are presenting retrospectively 6 cases who presented with a change in voice as the main symptom along with other associated symptoms which on evaluation of the laryngeal lesions were proven to be tubercular laryngitis.

### Materials and Methods

This is a retrospective case series which is carried out in a Central Medical institute, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, situated in North Eastern India which is one of the referral and tertiary hospital of the our country. Patients who presented with chronic cough with or without change in voice and throat discomfort are being investigated accordingly from the outpatient and inpatient department. Upper GI scopy is carried out for inspection of the pharynx, larynx, and upper gastrointestinal tract to rule out any pharyngeal, laryngeal pathology and gastroesophageal reflux. In patients where laryngopharyngoscopy and upper GI scopy are normal, bronchoscopy was carried out on them to rule out any pathology involving the lower airway like tuberculosis or malignancies. In a period duration of one year (January, 2017 to December 2017) a total number of 6 patients who presented with hoarseness of voice and chronic cough had ulcerative lesions involving the supraglottis, glottis and subglottic areas of the larynx. The histopathological biopsy from the lesions was send along with the chest X-ray, sputum for acid fast bacilli and viral markers. Two patients had significant treatment history of being pulmonary tuberculosis and were on antitubercular medications at the time of presentation. The clinical profile of the patients who had significant lesions is shown in Table 1.

Age	Gender	Chief complaints	Significant treatment history
65	Female	Hoarseness of voice - 2 months	No history of tuberculosis in the past
28	Female	Cough with Hoarseness of voice - 3 weeks	No past history of tuberculosis
43	Male	Cough with Hoarseness of voice - 1 months	No past history of tuberculosis
28	Female	Hoarseness of voice - 6 months	No past history of tuberculosis
30	Female	Hoarseness of voice, odynophagia with ongoing fever - 2 months	On ATT category I for 5 months
42	Female	Hoarseness of voice - 1 month	On ATT category I for 4 months

**Table 1:** Clinical profile of patients.

## Results

In the last 12 months (January 2017-December, 2017), out of the total 12 patients who had hoarseness of voice with cough, 6 patients were found to have laryngeal lesions, 5 had ulceroproliferative lesions and one patient had polypoidal lesions as shown in Figure 1 involving the true and false vocal cords, the arytenoids, epiglottis. Biopsy were taken from all these lesions and the histopathological reports of all the 6 biopsied samples showed multiple caseating epitheloid granulomas with multiple langhan giant cells suggestive of tuberculosis (Figure 1). Two biopsied samples demonstrated the presence of acid fast bacilli. All these patients with the laryngeal lesions had hoarseness of voice as the main symptom with two patients already on treatment for primary pulmonary tuberculosis. The laryngeal involvement in tuberculosis was

more in the female group of patients in this case series. The chest X-ray in 4 patients had associated pulmonary lesions, one with miliary shadows, another with cavitatory lesion in the right upper zone and the two patients with right lower lobe consolidation. The other two patients had purely primary laryngeal tuberculosis. Three patients had sputum positive for AFB, two of them were found to have multidrug resistant tuberculosis by gene X-pert study of the BAL taken during bronchoscopy. The total white cell counts, differential counts and hemoglobin were normal in all patients, with high ESR in all 6 patients with a mean of 77. Viral markers were also done and all patients were immunocompetant (Table 2). All patients were started on antitubercular medication, as per the category where they fall under the Revised National Tuberculosis Control Programme of the country.

Variables	Laryngeal tuberculosis
Total no. of patients	6
<b>Age</b>	
21-30	2
31-40	
41-50	2
51-60	
60-70	1
<b>Gender</b>	
Male	1
Female	5
<b>Symptoms</b>	
Hoarseness of voice	6
Cough	2
Odynophagia	1
<b>Bronchoscopic /endoscopic findings</b>	
Laryngeal Lesions	
Ulcerative lesion	5
Polypoidal lesion	1

Sites of involvement	Anterior part of the larynx –epiglottis, true vocal cords, false vocal cords, arytenoids
Histopathological findings of biopsy samples	Multiple caseating epitheloid granulomas with multiple langhan giant cells
AFBpositive	2
<b>Chest X-ray</b>	
Normal	2
Abnormal (Miliary shadows, Right middle lobe lesion, Cavitory lesion )	4
Sputum ABF	Negative
Bal AFB Positive	3
MDR TB (by nucleic acid amplification test )	2
<b>Viral markers</b>	
HIV	Negative
HBsAg	Negative
AntiHCV	Negative
ESR (mean)	77

**Table 2:** Results of Bronchoscopic /endoscopic findings, Chest X-ray and Viral markers.

## Discussion

The incidence of laryngeal tuberculosis is low as compared to other forms of tuberculosis. However in the present days with the increased number of immunocompromised patients and multidrug resistant cases the incidences of laryngeal tuberculosis also seem to be increasing. The clinical pattern of presentation of laryngeal tuberculosis has changed over the years. Formerly, laryngeal involvement was always associated with advanced pulmonary infection with constitutional symptoms of productive cough, fever, weight loss, hemoptysis and change in voice. However recent studies have shown patients presenting mainly with hoarseness of voice and with little involvement of the lungs thus suggesting primary laryngeal tuberculosis which can be mistaken form malignancy or chronic laryngitis if not investigated properly [1-5]. In India several observational studies have found that clinical manifestations of laryngeal tuberculosis seemed to have differed from those described in the past and the incidence of laryngeal tuberculosis also differs. A study conducted by Siva et al in South India in 2015 on 50 patients with pulmonary tuberculosis found that laryngeal tuberculosis was present in only one of the 50 patients who had hoarseness of voice with biopsy proven ulcer of the larynx suggestive of tuberculosis [6]. As per his study in 2015 there were no cases of primary laryngeal tuberculosis. A study conducted from India too in Mumbai by Jaini V lodha et al. in 2015 also found that most patients have secondary laryngeal tuberculosis with pulmonary tuberculosis and the laryngeal lesions though not biopsy proven had responded to antitubercular medication with supportive evidence of sputum positivity and X-ray imaging of pulmonary tuberculosis [7]. Another study conducted by Sanjay Gandhi et al however found that 80 percent of the patients with hoarseness of voice had primary laryngeal tuberculosis with no pulmonary involvement [8]. Laryngeal tuberculosis can thus present in two forms, primary and secondary. The primary form results from the direct seeding of the tubercle bacilli on the structures which can results

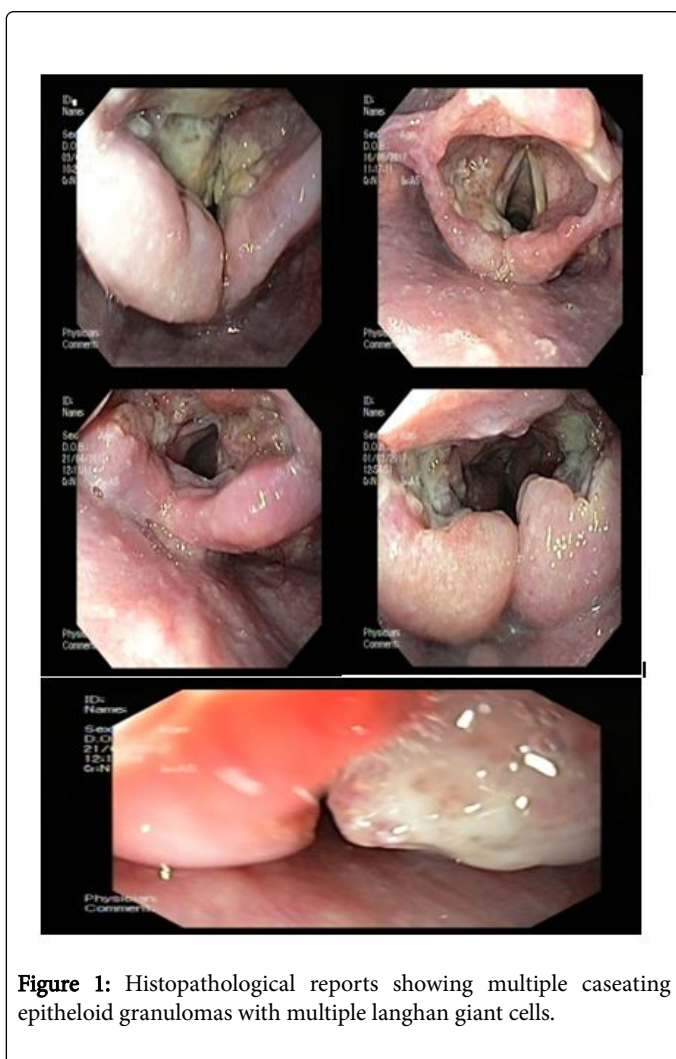
from hematogenous or lymphatic spread whereas the secondary form is due to the seeding of the bacilli in the laryngeal structures directly from the lungs through the secretions [5]. In our study we could find the presentation of both primary and secondary laryngeal tuberculosis with patients having hoarseness of voice and chronic cough as the main symptoms and two of the six patients had primary laryngeal tuberculosis. From the present study, 4 patients had associated lung parenchymal lesions, 2 patients only had tubercular laryngeal lesions. In previous literature the posterior portion of the true vocal cords, the arytenoids cartilages, and interarytenoids space are involved more often as they are continuously being spills with the sputum positive for tubercle bacilli in the presence of coinciding pulmonary tuberculosis. However what is observed in recent studies is that primary tubercular laryngitis is as common as those with associated pulmonary parenchymal lesions and the anatomical involvement includes the anterior structures of the larynx [1,5,6,9-12]. In our study we could find that the anterior structures of the larynx are more involved than the posterior ones thus indicating that the hematogenous and lymphatic spread of the bacilli is responsible for the structures to get involved. Studies have shown that the tubercular lesion includes the ulcerative, ulcero-fungative, non-specific inflammatory or polypoid lesions. These lesions may mimic laryngeal carcinoma, chronic laryngitis, laryngeal candidiasis and thus biopsy of the lesion will help in diagnosis of tuberculosis and excludes malignancy as early as possible. Direct laryngoscopy and biopsy are mandatory to establish a definitive diagnosis. It should be kept in mind that both tuberculosis and malignancy may coexist in the same patient [13-15]. In this case series, the lesions that were seen included ulcerative to ulceroproliferative and polypoidal lesions which needs to be differentiated from chronic laryngitis, malignancies, and chronic inflammatory disease like scleroderma. Many studies found laryngeal tuberculosis to be common between 20-30 years of age, male predominant and in the immunocompromised group of patients, with primary tubercular laryngitis accounting only 19 percent of the tuberculosis cases and

secondary tubercular laryngitis (which results from seeding of tubercle bacilli from the lungs) of 15-37% [4]. In our cases series, females were more commonly affected compared to male, seen more between 20-30 years of age, and all patients were immunocompetent with hoarseness of voice being the predominant symptoms and not odynophagia as seen in the past [1]. Four patients had pulmonary involvement, 3 patients were sputum positive, two found to be MDR tuberculosis and two patient showed positivity for acid fast bacilli from the laryngeal biopsy. What is also observed in our group of patients is that two patients already on treatment for pulmonary tuberculosis had laryngeal lesion with MDR bacilli positive from the BAL taken. Thus an alarming picture suggesting that MDR tuberculosis should be suspected even in patients with laryngeal lesion and all patients with different forms of tuberculosis.

clinical judgment to suspect laryngeal tuberculosis being a contagious disease, especially in our country India that contributes a huge percentage to the global incidence of tuberculosis worldwide. This also indicates an alarming situation that multidrug resistant tuberculosis can affect even the most uncommon site which was once thought to be rare. The study strongly suggests that histopathological diagnosis with acid fast bacilli demonstration is the standard diagnostic tool for diagnosis which helps ruling out malignancies which are the next important differential diagnosis in such group of patients. Diagnostic evaluation does pose a huge challenge due to the unusual site of involvement making tissue specimen collection invasive and requires good expertise.

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**Figure 1:** Histopathological reports showing multiple caseating epithelioid granulomas with multiple langhan giant cells.

## Conclusion

This study shows that the presentation of tuberculosis can be varied and a high index of suspicion should be there from the physician