

# Laryngeal Involvement in Pulmonary Tuberculosis

Pages with reference to book, From 274 To 276

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## Abstract

Fifty-one patients with established pulmonary tuberculosis underwent clinical evaluation and endoscopic examination of the larynx to determine the manifestations of laryngeal involvement. There were 46 males and 5 females (mean age 38 years). Fever, cough and haemoptysis were the prime pulmonary complaints while hoarseness, weak voice and episodic dyspnoea were the main laryngeal symptoms. Sites of laryngeal lesions included true vocal cords, arytenoids and false vocal cords. Oedema, pallor, ulcers, vocal cord immobility and thickening were the main laryngeal lesions observed. Twenty-four (47%) cases showed morphological changes in the larynx. The presentation pattern was consistent with the classical description and strated (JPMA 46:274, 1996).

## Introduction

Laryngeal affections of the pulmonary tuberculosis is common. The incidence of pulmonary tuberculosis with concomitant tuberculous laryngitis has declined in the developed countries due to better diagnostic facilities, early and effective chemotherapeutic regimens. However, in the underdeveloped world significant laryngeal involvement<sup>1,2</sup> is seen. but primary laryngeal tuberculosis is still rare<sup>3</sup>. The purpose of this study was to determine the manifestations of laryngeal involvement in the patients admitted at Sardar Bahadur Khan Institute of Chest Diseases, Quetta. This institute is a 200 bedded hospital and functions under the auspices of Pakistan Railways to serve as a tertiary referral centre for railway employees and their dependents on a countrywide basis.

## Patients and Methods

The study involved 51 patients recently admitted at the Sardar Bahadur Khan Institute of Chest Diseases at the time of evaluation. All were suffering from pulmonary tuberculosis confirmed by abnormal chest x-rays, elevated ESR and predilection for laryngeal involvement was not demonstrated by presence of acid fast bacilli in the sputum smear. These patients were endoscopically examined and assessed using olympus laryngobronchoscope fitted with olympus OTV-F2 videocamera system for recording the observations. Four percent xylocaine spray and nasal packs were used for the local anaesthesia.

## Results

There were 46 males and 5 females with a mean age of 38 years. Majority of the patients were labourers. Only 15 cases were tobacco users. Fever, cough and haemoptysis were the prime pulmonary complaints (Table 1).

Table I. Analysis of symptoms.

Symptoms	No. of cases
Cough	39
Fever	34
Haemoptysis	22
Episodic dyspnoea	18
Chest pain	13
Weight loss	11
Generalized weakness	11
Painful swallowing	4
Hoarseness	2
Weakness of voice	2

Hoarseness and weakness of voice was noted in 2 patients and episodic dyspnoea in 18 cases (Table I). Laryngeal examination showed involvement of true vocal cords in 13 cases arytenoids and false vocal cords in 11 each, epiglottis in 7, aryepiglottic fold in 3 and interarytenoid area in 1 case.

Table II. Types of laryngeal lesions.

Lesions	No of cases
Oedema	20
Pallor	10
Ulcers	4
Vocal cord immobility	4
Thickening	4
Polyp	1
Tubercle	1

Table II shows oedema and pallor as the most common type of lesion followed by ulcers, vocal cord immobility and thickening. Twenty-four (47%) cases also showed morphological changes in the larynx.

### Discussion

Laryngeal tuberculosis is a frequent complication of pulmonary tuberculosis<sup>4</sup>. Discharge of large number of bacilli in the endobronchial secretions leads to direct invasion of the laryngeal mucosa which is already inflamed<sup>5</sup>. Other possible modes of spread include haematogenous<sup>6</sup> and via cervical lymphatics<sup>7</sup>. Larynx may also be involved along with other organs in miliary tuberculosis<sup>8</sup>. Tobacco abuse has a definite link with laryngeal tuberculosis<sup>5</sup> but in the present study, only 1 patient gave history of smoking. Hoarseness or weakness of voice is usually an early symptom of tuberculosis affecting the vocal cords. It may be produced by lesion on the cord or as a sign of immobility of the cords. Minimal cord lesion may remain asymptomatic. Weakness of voice may precede hoarseness<sup>9</sup>. Odynophagia is produced by ulceration, sub-mucosal infiltration, perichondritis or neuritis<sup>10</sup>. Episodic dyspnoea is often a manifestation of laryngeal oedema. Apical cavitary disease of the lung favours endobronchial dissemination<sup>11</sup> and hence, promote laryngeal tuberculosis.

Vocal cords have been the site of involvement in other studies<sup>12,13</sup>. Swollen arytenoids seen in this study, has also been reported by Beg and Marfani<sup>2</sup>, however, involvement of interarytenoid area was uncommon in this study which is in contrast to other studies<sup>1,14</sup> where interarytenoid lesions were

common in females. Involvement of the posterior part of the larynx and the interarytenoid area is due to the tendency of the sputum to pool in this area in bed ridden patients<sup>15</sup>. Anterior portion of the vocal cords was spared which is in contrast to other series where this part of the vocal cords showed the commonest involvement<sup>12,13,16</sup>. Anterior portion of the vocal cords is believed to be more vulnerable due to vocal abuse and effect of irritants<sup>12</sup>.

Epiglottis was found involved in 7 cases in terms of oedema and thickening. Gross changes like "Turban epiglottis", or granulations were not seen in the current series. No destructive lesion of epiglottis was picked up, as reported by Soda et al<sup>4</sup> in a high percentage of patients in a South American study. Among the various types of lesions oedema was frequent in one study<sup>2</sup> and insignificant in another study<sup>12</sup>.

Ulcerations were common in a study reported by Rupa and Bhanu<sup>12</sup> from India but Beg and Marfani<sup>2</sup> could not locate any ulcerative lesion. The morphological appearances have an interesting pathological basis. The tubercle bacilli carried in the sputum get deposited in the area of laryngeal inlet with stratified squamous epithelium. Malnutrition and trauma caused by vocal abuse may predispose to infections<sup>17</sup>. The bacilli burrow beneath the epithelium leading to sub-epithelial microtubercles. Reaction of the host tissue excites exudation and oedema formation. A proliferative and infiltrative process leads to the development of a typical tuberculous granuloma. Caseation, ulceration and secondary infection give rise to additional oedema more marked in the region of arytenoid and epiglottis. Gross appearance tends to modify according to the location in the larynx where the mucosa is closely adherent to sub-mucosal structures like true vocal cords where ulceration is common. Where the mucosa is redundant like arytenoid, oedema and marked swelling supervenes. A combination of oedema and ulceration can account for the multiple and multifocal lesions. The ulceration stimulates hypertrophy of the epithelium and the sub-epithelial fibrous tissue with metaplasia giving rise to the so called "thickened" areas. Hypertrophic lesion was a common observation in one study<sup>12</sup>. No definite reason for the pallor could be ascertained in this series. Hyperemia suggestive of laryngitis as documented by others<sup>11,12</sup> was not seen here. The reasons of vocal cord immobility could be recurrent laryngeal nerve involvement, secondary to muscular infiltration or fixation of cricoarytenoid joint<sup>2</sup>. Tuberculous infiltration of the pleura or mediastinal lymph nodes implicate recurrent laryngeal nerve of the left side usually. Frequent involvement of the left nerve is also explained on its long intrathoracic course compared to right side<sup>18</sup>. Fibrosis of the apical pleura also involves recurrent laryngeal nerve and such involvement is usually not responsive to the chemotherapy and therefore, may be considered irreversible<sup>19</sup>. The presence of vocal cord palsy signifies advanced stage of the disease<sup>20</sup>. The prevalence of laryngeal changes associated with the pulmonary tuberculosis is around 1.5%<sup>21</sup>. In the developing countries pulmonary tuberculosis still ranks among the major killer. The frequency of laryngeal tuberculosis in an African study was 26.7%<sup>1</sup>, while in a Pakistani series it was 37%<sup>2</sup>. The present figure of 47% laryngeal involvement with advanced pulmonary tuberculosis is quite high, despite effective bactericidal agents against microbacteria. The presentation pattern of laryngeal tuberculosis has changed in the developed world<sup>6,22</sup> as it resembles laryngeal carcinoma. Identical observations were recorded in an Indian study<sup>12</sup> and in a case report published from Pakistan<sup>23</sup>. Our findings do not confirm any changing pattern. The presentation is consistent with the classical description and results showed no predilection for any laryngeal site. We recommend an assessment of the larynx in all the advanced cases of pulmonary tuberculosis to indicate any changing pattern of laryngeal morphology.

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