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Original Research Article

Primary laryngeal tuberculosis-changing trends and masquerading presentations: a retrospective study

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ABSTRACT

Background: Primary laryngeal tuberculosis is one of the common forms of head and neck tuberculosis. There is a changing trend in the manifestations of this disease and this retrospective study highlights the varying masquerading manifestations and the diagnostic and management dilemmas in managing such patients.
Methods: This is a retrospective study of patients with laryngeal tuberculosis at a tertiary care hospital. Patients with primary laryngeal tuberculosis without pulmonary involvement where analyzed for the clinical manifestations, the diagnostic difficulties that where encountered and the management of these patients were analyzed.
Results: Forty eight cases with laryngeal tuberculosis where identified. 12 patients with concomitant Pulmonary involvement where excluded from the study. Of the 36 patients with primary laryngeal tuberculosis 22 cases presented with atypical features like manifestation as acute epiglottitis (8 cases), mimicking laryngeal malignancy (10 cases) and polypoid lesions of the vocal cord (4 cases).
Conclusions: Despite the rarity of primary laryngeal tuberculosis, a high index of suspicion is always necessary in any laryngeal lesions eluding diagnosis considering the varied manifestations of present day laryngeal tuberculosis.

Keywords: Primary laryngeal tuberculosis, Epiglottitis, Laryngeal malignancy, Polypoid lesion

INTRODUCTION

Tuberculosis larynx is one of the most common forms of head and neck tuberculosis, second only to cervical lymphadenitis.[1] In pre-antibiotic era, laryngeal tuberculosis was most commonly associated with active pulmonary tuberculosis. There is a resurgence of pulmonary and extra pulmonary tuberculosis occurring in developing and developed countries, because of the association of tuberculosis with Human immunodeficiency virus.[2] In spite of the expected rarity of the incidence of laryngeal tuberculosis, owing to the advance in the effective anti-tubercular drugs, there is a rise in the incidence of laryngeal tuberculosis and a changing trend noted in its clinical presentation. Hence it is essential for the present day otolaryngologists to know the atypical manifestations of laryngeal tuberculosis to prevent mismanagement of such cases.[3] We present a retrospective clinical study of primary laryngeal tuberculosis masquerading as common laryngeal pathologies like malignancy, acute epiglottitis, polypoidal lesion of vocal cord.

METHODS

We did a retrospective study from September 2011 to March 2016 and identified 48 cases of laryngeal tuberculosis diagnosed and treated in the department of

otolaryngology, JIPMER. The diagnoses were confirmed by histopathological examination. Out of these cases, 36 cases had laryngeal involvement without concomitant pulmonary involvement and 12 patients had active pulmonary tuberculosis with laryngopharyngeal involvement. Out of these 36 cases with laryngeal tuberculosis, 22 patients had atypical manifestations, which mimicked as common laryngeal pathologies like acute epiglottitis, malignancy larynx and polypoid lesion of the vocal cord which led to the misdiagnosis. These cases were grouped into three categories: as acute epiglottitis, as malignancy larynx, as polypoid lesions of larynx. These cases were analyzed for their demographic profile, clinical manifestations, laryngoscopic findings and radiological features which created the diagnostic dilemma leading to the initial misdiagnosis. The treatment outcome and functional voice outcome were also analyzed for these cases.

RESULTS

As epiglottitis

Out of the 22 cases studied, 8 cases were found to be presenting as acute epiglottitis when presented initially. These patients were in the age group between 32 to 41 years (mean=43.6 years). Sex ratio was M:F=2:1. These cases predominantly presented with acute onset and short duration symptoms as shown in the table. They also had clinical features characteristic of acute epiglottitis like, muffled voice, odynophagia, drooling of saliva. Video-laryngoscopic findings of these cases predominantly showed congested edematous epiglottis and aryepiglottic fold, suggestive of acute epiglottitis. Radiological evaluation with X-ray soft tissue neck revealed the characteristic swollen epiglottitic shadow or thumb sign. Hence, these patients were started on IV antibiotics (injection ceftriaxone after test dose), adrenaline nebulization and high flow oxygen. As there was no symptomatic improvement, these patients were evaluated with contrast enhanced computed tomogram of the neck which showed localized irregular thickening of epiglottis and aryepiglottic fold without any cartilaginous erosion or calcification. Paraglottic and pre-epiglottic fat spaces were preserved. Two of these cases also had intralaryngeal focal hypodense area with peripheral enhancement suggestive of intralaryngeal abcess collection. These patients were taken up for direct laryngoscopy and biopsy. Histopathology revealed features of tuberculosis like granulation tissue with central caseous necrosis and langerhans giant cells and epitheloid macrophages.

As malignancy

Ten of the patient in our series presented with symptoms and direct laryngoscopic findings suggestive of malignancy. These patients had long duration of symptoms from three weeks to six months. They also had risk factors like chronic smoking and alcoholism. Predominant symptoms in these patients were hoarseness, followed by noisy breathing (stridor) and dysphagia. Computed tomogram of the neck showed an enhancing soft tissue density involving various subsites of larynx including true and false vocal cords, arytenoids and aryepiglottic folds, with no evidence of cartilage erosion or extralaryngeal spread or preepiglottic or paraglottic fat plane obliteration. The initial direct laryngoscopy and biopsy revealed granulation tissue with macrophages and did not reveal any evidence of malignancy. Hence the possibility of biopsy from non-representative area (necrotic tissue), verrucous carcinoma and tuberculosis larynx were considered. AFB staining of the biopsy specimen was also requested. Patients were started on anti-tubercular drug regimen following the diagnosis.

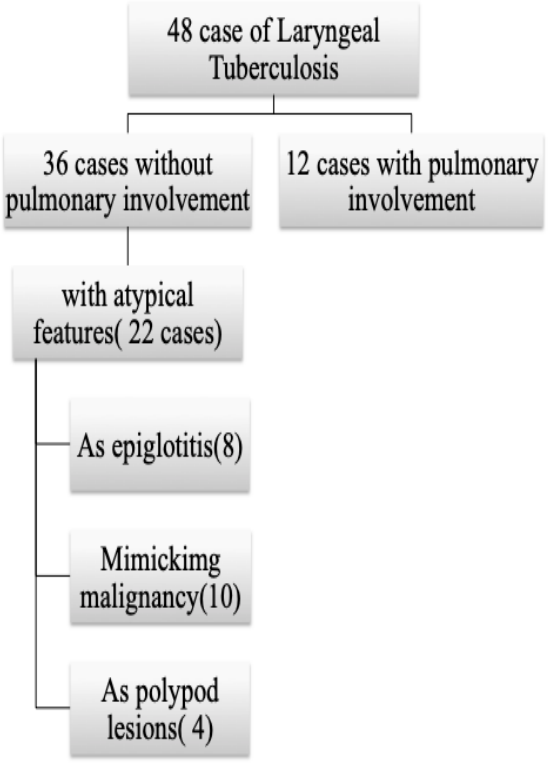

Figure 1: Distribution of cases in our study.

As polypoid lesion of the vocal cord

In 4 of our cases, we found a single pedunculated reddish polypoidal lesion arising from unilateral vocal cord. An initial diagnosis of infected vocal polyp was made. Computed tomogram revealed minimally enhancing mass with broad base and no evidence of calcifications or perichondritis. However biopsy following the excision of polypoid lesion, revealed granulomatous lesion with langerhans giant cells and caseous necrosis which pointed towards a possible diagnosis of primary laryngeal tuberculosis. Patients responded well to anti-tubercular drugs.

Table 1: Various masquerading features of primary laryngeal tuberculosis and their analysis in our study.

S. no	Masquerading presentation	Total no. of cases	Demography		Duration of symptoms	Most common clinical features	
			Mean age and range	Sex ratio (M:F)		Symptoms	Videolaryngoscopic findings
1	Acute epiglottitis	8	43.6 (32-41)	2:1	5 to 7 days	Acute onset odynophagia, muffled voice, drooling of saliva and fever	Congested edematous epiglottis and aryepiglottic fold
2	Malignancy larynx	10	48.8 (45-54)	5:2	1 to 6 months	Hoarseness, noisy breathing, dyspnea and foreign body sensation in throat	Exophytic or localized ulcer proliferative lesion mostly in anterior parts of glottis
3	Polypoid lesion of larynx	4	31 (24-38)	0:2	2 to 4 months	Change in voice, cough, dysphagia	Granular pedunculated polypoid lesion with surrounding edema

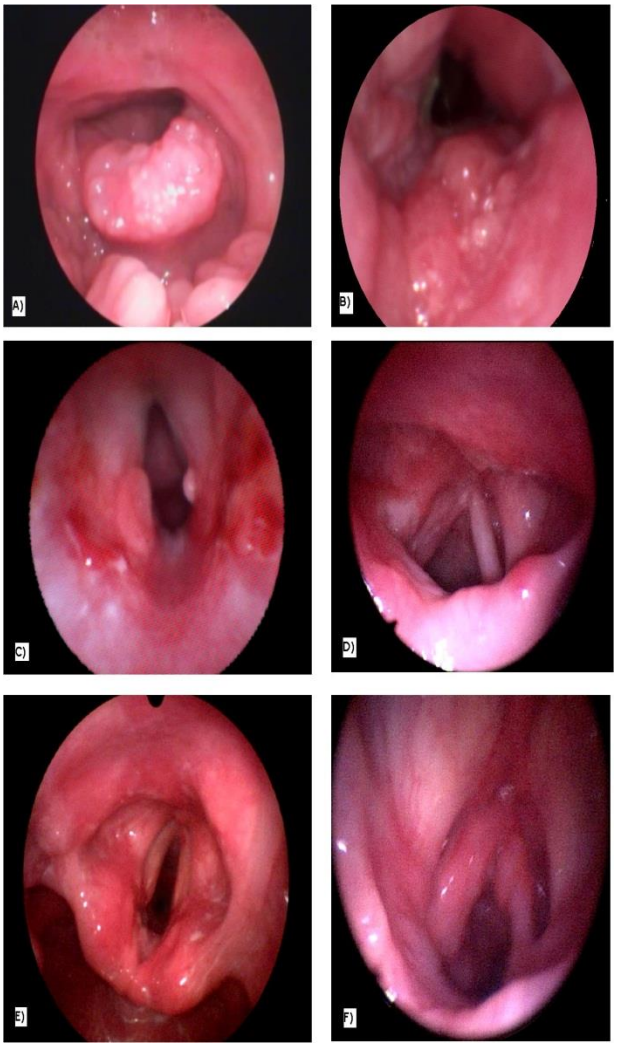

Figure 2: Most common laryngoscopic features of Tuberculosis larynx in our study; (A) localised oedema of epiglottis (turban epiglottis); (B) interarytenoid mamillations; (C) ulcers in true vocal cord (mouse nibbles ulcers); (D) Monocorditis; (E); arytenoid and aryepiglottic fold edema; (F) thickening of ventricular folds and true vocal cord.

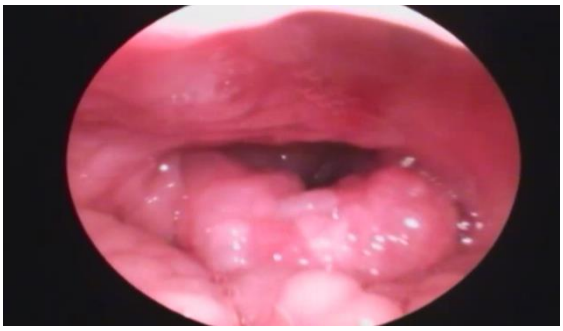

Figure 2: Primary laryngeal tuberculosis mimicking as acute epiglottitis.

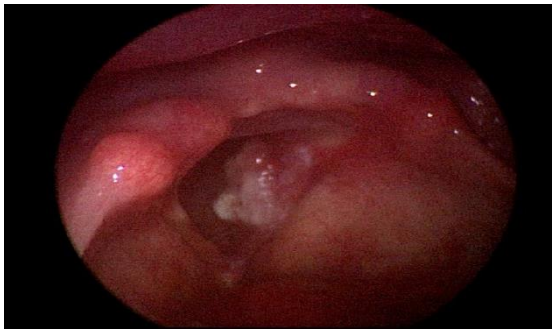

Figure 3: Primary laryngeal tuberculosis mimicking as laryngeal malignancy.

Figure 4: Primary laryngeal tuberculosis mimicking as polypoid lesion of larynx.

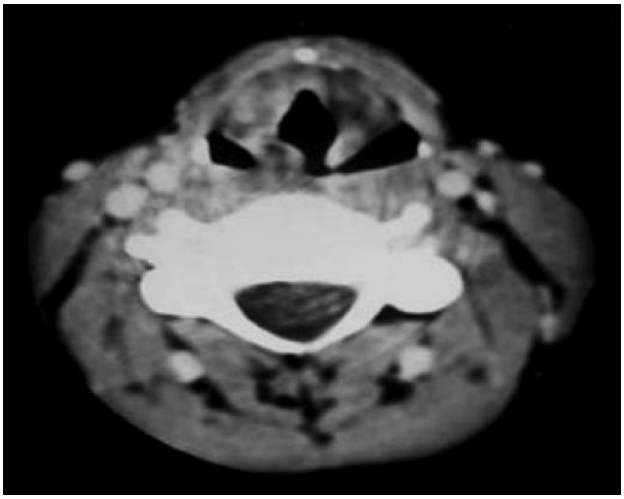

Figure 5: Computed tomogram of larynx showing thickening of right anterior false cord with intact cartilaginous framework.

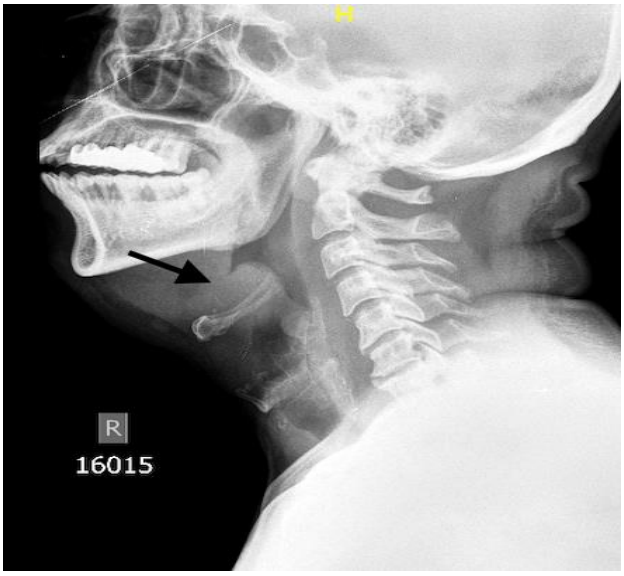

Figure: 6: Plain X-ray soft tissue neck showing thickened epiglottis with obliteration of vallecula in a patient with tuberculosis of larynx mimicking acute epiglottitis.

DISCUSSION

The cornerstone of the diagnosis of laryngeal tuberculosis in the past was based on presence of features of active pulmonary tuberculosis with constitutional symptoms and identification of characteristic lesion of laryngeal tuberculosis, such as, monocorditis, laryngeal peri-chondritis, interarytenoid mamillations, turban epiglottis, posterior glottic ulcers (mouse nibbled vocal cord ulcers), granulations, edema and thickening of aryepiglottic folds.[4,5]

But with the advent of anti-tubercular drugs, the clinical manifestations of laryngeal tuberculosis is showing a changing trend towards predominant laryngeal symptoms with absence of constitutional symptoms and presenting with atypical presentations mimicking acute epiglottitis, malignancy and laryngeal granulomatous polyp.[6]

This change in presentation can be attributed to various causes such as:

- In pre antibiotic era, laryngeal infections were seen mostly in sputum positive patients. Since most of the treatment was given in inpatient basis, the recumbent position caused pooling of mycobacterium rich sputum along the posterior airway and a direct spread of infection to posterior larynx. Hence posterior part of larynx was most commonly affected then.[7]
- But currently sputum negative cases have been reported with laryngeal tuberculosis, indicating the rise in hematogenous spread of infection to larynx and anterior laryngeal involvement are increasing because of the advent of outpatient based treatment.[7,8]
- Hematogenous spread also changed the appearance of the lesion to be more exophytic than ulcerative, which was due to direct spread. This causes varied unconventional presentation of laryngeal tuberculosis lesions mimicking neoplasms, inflammatory edema and polyps, resulting in delayed diagnosis and treatment.[8]

Besides the fact that laryngeal tuberculosis with no pulmonary involvement can mimic neoplastic lesions, it is also true that the incidence of primary laryngeal tuberculosis is much rarer than laryngeal carcinoma. Hence it is easy to misdiagnose primary laryngeal tuberculosis, resulting in repeated biopsies and resultant complications with excessive exposure to hospital staff. Furthermore, laryngeal tuberculosis is more common in patients who are chronic alcoholic and smokers, hence shares the same risk factors as that of malignancy.[9]

Computed tomogram findings of laryngeal tuberculosis are varied and non-specific, however certain features can differentiate this from laryngeal carcinoma. In most of our cases, we found the lesions with low attenuation areas suggestive of caseous necrosis. The major differentiating feature from laryngeal malignancy was the intact laryngeal cartilaginous framework, despite the diffuse nature of the lesion and involvement of paraglottic space in few cases. Correlating these findings with laryngoscopic picture suggested nonmalignant condition as differential diagnosis.[10]

The etiology of laryngeal tuberculosis can be explained by two theories:

Bronchogenic theory: common in sputum positive patients. Larynx is infected by direct spread from bronchial secretions

Hematogenous theory: if larynx is infected from any other sites except lungs via hematogenous spread.

Common in sputum negative or non-pulmonary tuberculosis patients.[11]

In our study of atypical presentations of laryngeal tuberculosis, we encountered almost equal incidence of primary laryngeal tuberculosis as that of cases secondary to pulmonary tuberculosis. This suggests that patients with hematogenous spread of laryngeal tuberculosis have varied and atypical presentation and their incidence are on a rise.

CONCLUSION

In spite of the rarity of primary laryngeal tuberculosis, a high index of suspicion is always necessary in any laryngeal lesions, considering the varied manifestations of present day laryngeal tuberculosis. Thus, through this study we emphasize on the changing trends and varied manifestations and the need for histopathological study of biopsied tissue in any suspected laryngeal lesion, as it is proved to be the only effective tool for diagnosis of this elusive disease.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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