

Tuberculosis of the Aryepiglottic Fold and Sinus Pyriformis: A Rare Entity

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Abstract

Tuberculosis of the larynx and hypopharynx is an uncommon entity and rarely considered in the differential diagnosis of the laryngo-pharyngeal diseases. We describe a case of a 40-year-old man with tuberculous involvement of the aryepiglottic fold and medial wall of the sinus pyriformis mimicking a malignancy. Current literature concerning the clinical, histopathological, radiological and diagnostic features of this rare entity is discussed.

Key Words: Larynx, hypopharynx, sinus pyriformis, tuberculosis, diagnosis.

Introduction

ACCORDING TO World Health Organization (WHO) statistics, each year approximately 10 million people worldwide contract tuberculosis, mainly involving the lung, and more than 3 million people die from the disease (1, 2). In Turkey, the number of people infected with tuberculosis yearly is estimated to be about 35,000–40,000 (2). Mycobacterial disease is also increasing in most of the industrialized countries (3). This increase may be due to several factors: the HIV epidemic, immigration from countries where tuberculosis is endemic, transmission of tuberculosis in crowded settings, deterioration in quality of health care, and immunosuppressive drugs (2, 3). The tuberculosis bacilli that cause disease in humans are generally *Mycobacterium tuberculosis*, *M. bovis* and *M. africanum*. Humans are the only reservoir for *M. tuberculosis*. Mycobacterial infections are usually classified into two groups: (a) infections caused by *M. tuberculosis*, and (b) infections caused by the atypical mycobacterial organisms (4).

Laryngeal tuberculosis was the most common disease involving this anatomical region in the early part of the twentieth century (5). However, today laryngeal involvement is extremely rare (6). This report describes a case with the unusual submucosal presentation of tuberculosis in the medial wall of the pyriform sinus and aryepiglottic fold of the larynx, with clinical mimicking of malignancy.

Case Report

A 42-year-old male patient was referred to our department in order to rule out carcinoma of the larynx and hypopharynx. He had been evaluated by a physician because of a 2-month history of difficulty and pain in swallowing. Magnetic resonance imaging (MRI) of the neck revealed a left-sided laryngo-hypopharyngeal mass involving the pyriform fossa. The aryepiglottic fold of the larynx presented a low-intensity in a T1-weighted image and a high-intensity in a T2-weighted image (0.5 Tesla open MRI view) (Figs. 1A and 1B).

The patient was a heavy smoker and had worked in a cement factory for 20 years. In our examination, indirect laryngoscopy showed a marked submucosal edema in the left pyriform sinus and aryepiglottic fold. There was no superficial ulceration. The epiglottis, false and vocal folds were not affected. There were no palpable cervical lymph nodes. The rest of the ear-nose-throat and physical examinations were normal. Chest radiography,

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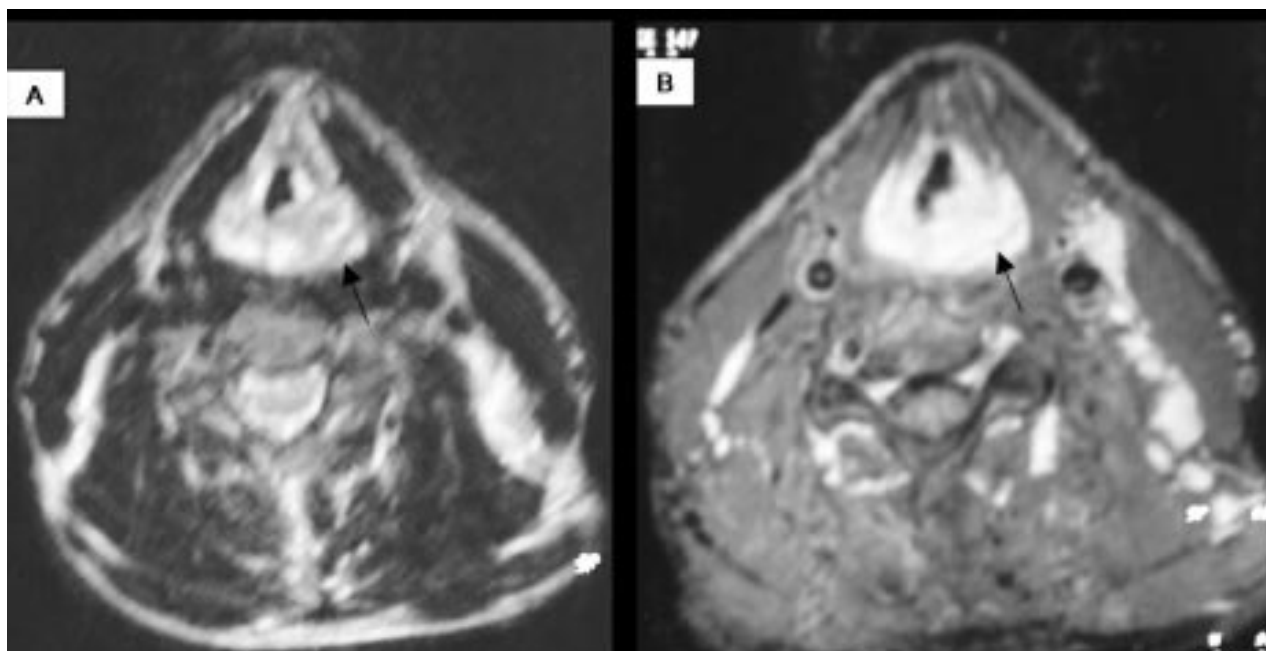


Fig. 1. MRI view of the tuberculous lesion (arrow indicates the tuberculous involvement of the left-sided aryepiglottic fold and medial wall of sinus pyriformis). (A) T₁-weighted view, (B) T₂-weighted view.

however, revealed an apical infiltration in the right upper lobe of the lung (Fig. 2). A complete blood count was unremarkable, and erythrocyte sedimentation rate was slightly higher than the normal limits. HIV serology was also negative. A purified protein derivative test was not diagnostic due to prior vaccination. A direct laryngoscopy was performed using general anesthesia, and multiple submucosal biopsy specimens were taken from the pyriform sinus, aryepiglottic fold, post-cricoid and cervical esophageal regions. Pathologic examination revealed tuberculoid-type granulomas with areas of caseation necrosis, epithelioid cells, lymphocytes

and Langhans' type giant cells (Fig. 3). Sputum culture was positive for acid-fast bacilli. On the basis of the bacteriologic, radiologic and histopathologic findings, the diagnosis of pulmonary tuberculosis with larynx and hypopharynx involvement was established. A standard 6-month treatment with a combination of isoniazid, rifampicin, pyrazinamide, and ethambutol was started. The follow-up after treatment showed resolution of the symptoms, and 6 weeks later an MRI confirmed the improvement of the mass (1.5 Tesla MRI view) (Fig. 4).



Fig. 2. Chest X-ray reveals an apical infiltration (arrow) in the right upper lobe of the lung.

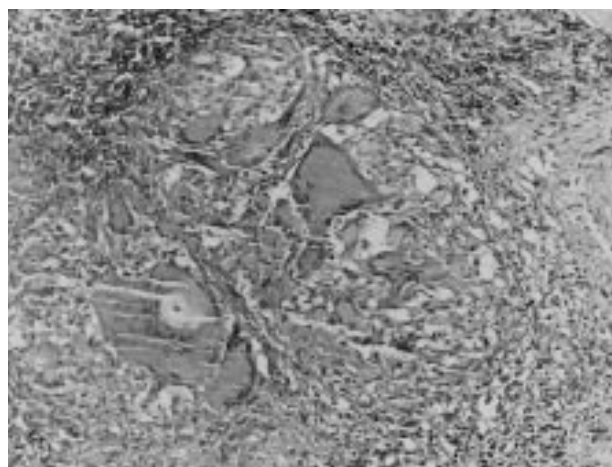


Fig. 3. Microscopically, non-necrotizing and necrotizing granulomas with Langhans giant cells and dense mononuclear inflammatory cell infiltration were seen under the squamous epithelium (HE, $\times 200$).

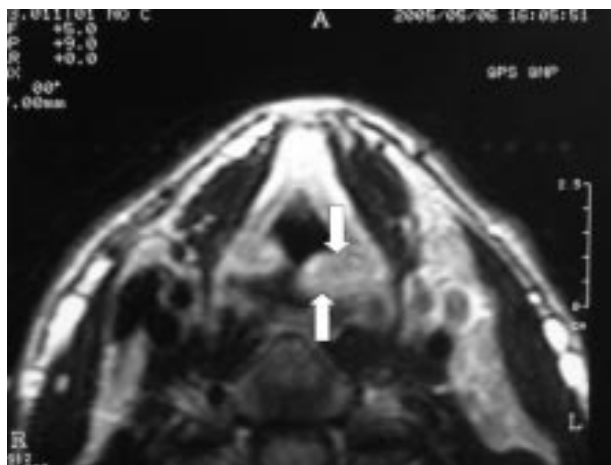


Fig. 4. Post-treatment MRI view of the lesion reveals a marked improvement of the lesion. Arrow indicates that minimal edema of the left aryepiglottic fold still persists.

Discussion

At the beginning of the 20th century, laryngeal tuberculosis was the most common disease of the larynx, but by the 1980s, this entity had become extremely rare, especially in developed countries (7). However, during the past decade, the incidence of laryngeal tuberculosis has increased and gained much attention for three important reasons: (a) many physicians do not consider tuberculosis in the differential diagnosis of laryngeal lesions and symptoms; (b) the disease has changed its behavior, targeting new age groups and sites with new types of lesions, including the presence of concomitant pulmonary lesions, (c) HIV and other immunosuppressive diseases and treatments have increased in the clinical setting (7).

Tuberculosis of the upper aerodigestive tract is a rare clinical entity, and recent incidence of laryngeal tuberculosis is less than 1% of all tuberculosis cases (2, 8). Rohwedder found only 11 laryngeal cases (1.3%) in his series of 843 tuberculosis patients (9).

The pathogenesis of laryngeal involvement is either primary or secondary (10, 11). Primary lesions occur in the absence of pulmonary disease. There are two theories for the etiopathogenesis of laryngeal tuberculosis: (a) the bronchogenic theory, which states that laryngeal involvement is secondary to pulmonary disease (directly spread) and (b) the hematogenous theory, which states that the larynx is infected from sites other than the lungs (12). In the present case, the laryngeal involvement was probably secondary to pulmonary disease.

The ratio of male to female patients with epiglottic tuberculosis is 2:1 to 3:1, and according to recent series, its predominant occurrence in individuals from 40–60 years of age (13). The age

of the present case (42 years old) was in this age range, but slightly lower than the reported average age, and the main risk factors were probably previous pneumoconiosis and smoking habit.

The most common clinical presentations of patients with tuberculosis are hoarseness (80–100%), dysphagia and odynophagia (50–67%), cough (44–48%), dyspnea (25%), hemoptysis (18–29%), cervical lymphadenopathy (12%), weight loss, and (rarely) systemic dissemination (11–13). In the present case, the main symptoms were dysphagia and odynophagia.

Classically, laryngeal involvement is mainly in the posterior half of the larynx, due to pooling of the infected sputum (7). However, according to Cleary and Batsakis, localization in the anterior half of the larynx now occurs twice as often as in the posterior half, and vocal cords are the most commonly affected site (50–70%), followed by false cords (40–50%), and epiglottis, aryepiglottic folds, arytenoids, posterior commissure and/or subglottis (10–15%) (3). Also, Gallas et al. reviewed 738 cases of laryngeal tuberculosis in articles in English and French. Of those 738 cases, 60.5% had localization in only one region of the larynx, most frequently the vocal cords (14). In the present case, the medial wall of the pyriform sinus and aryepiglottic fold were involved.

Classic signs of laryngeal tuberculosis are localized edema, granuloma or ulceration (12, 15). However, recent series have demonstrated that the appearance of edematous, polypoid laryngitis that is not easily distinguished from chronic laryngitis is increasing. According to Shin et al., the findings of laryngeal tuberculosis may be categorized into four groups: (a) whitish ulcerative lesions (40.9%), (b) nonspecific inflammatory lesions (27.3%), (c) polypoid lesions (22.7%), and (d) ulcerofungative mass lesion (9.1%) (16). We suggest that the present case involved one of the nonspecific inflammatory lesions (localized edematous mucosal appearance). Mucosal edema is probably secondary to lymphatic obstruction by the granulomas (6).

The diagnosis of tuberculosis can be established with a history, PPD test, chest X-ray, acid-fast sputum smears, bacteriological culture, and histopathology. Computerized tomography and MRI can show typical signs, such as mucosal lesions without infiltration of cartilaginous or prelaryngeal areas and paralaryngeal fat (13). In the present case, MRI revealed a “mucosal lesion” rather than an infiltrative tumoral lesion. Histopathologic examination of the lesion is the cornerstone of an appropriate diagnosis. Epithelioid granuloma with Langhans type giant cell, granulomatous inflammation and caseating granuloma for-

mation are characteristic features of this form of tuberculosis (8). It should be kept in mind that both tuberculosis and malignancy may coexist in the same patient (11). Therefore, the diagnostic challenge is, as in our case, first to exclude a laryngeal cancer. Other differential diagnostic considerations include syphilis, sarcoidosis, Wegener's granulomatosis, fungal infections, actinomycosis, leprosy, systemic lupus erythematosus, rheumatoid arthritis, relapsing polychondritis and amyloidosis (11).

An antituberculous therapy offers a good prognosis, generally curing the disease without any sequelae. Most lesions disappear over a 2-month period, as in the present case.

Conclusion

Today, otorhinolaryngologists should be aware of a tuberculous lesion in the differential diagnosis of the various head and neck pathologies. The incidence of tuberculosis is increasing worldwide, and the disease has changed its behavior in several ways. Tuberculosis of the larynx and hypopharynx should be suspected in cases presenting with dysphagia and odynophagia mimicking a laryngo-pharyngeal carcinoma.

References

1. Konishi K, Yamane H, Iguchi H, et al. Study of tuberculosis in the field of otorhinolaryngology in the past 10 years. *Acta Otolaryngol Suppl* 1998; 538:244–249.
2. Egeli E, Oghan F, Alper M, et al. Epiglottic tuberculosis in a patient treated with steroids for Addison's disease. *Tohoku J Exp Med* 2003; 201(2):119–125.
3. Cleary KR, Batsakis JG. Mycobacterial disease of the head and neck: current perspective. *Ann Otol Rhinol Laryngol* 1995; 104:830–833.
4. Bayazit YA, Bayazit N, Namiduru M. Mycobacterial cervical lymphadenitis. *ORL J Otorhinolaryngol Relat Spec* 2004; 66(5):275–280.
5. Agarwal P, Bais AS. A clinical and videostroboscopic evaluation of laryngeal tuberculosis. *J Laryngol Otol* 1998; 112:45–48.
6. Goyal A, Nagarkar NM, Uppal KS, et al. Tuberculosis of the pyriform fossa—a rare entity. *J Laryngol Otol* 1998; 112:782–783.
7. Kandiloros DC, Nikolopoulos TP, Ferekidis EA, et al. Laryngeal tuberculosis at the end of the 20th century. *J Laryngol Otol* 1997; 111:619–621.
8. Unal M, Dusmez D, Gorur K, et al. Nasopharyngeal tuberculosis with massive cervical lymphadenopathy. *J Otolaryngol* 2002; 31(3):186–188.
9. Rohwedder JJ. Upper respiratory tract tuberculosis. Sixteen cases in a general hospital. *Ann Intern Med* 1974; 80:708–713.
10. Ramadan HH, Tarazi AE, Baroody FM. Laryngeal tuberculosis: presentation of 16 cases and review of the literature. *J Otolaryngol* 1993; 22:39–41.
11. Richter B, Fradis M, Kohler G, Ridder GJ. Epiglottic tuberculosis: differential diagnosis and treatment. Case report and review of the literature. *Ann Otol Rhinol Laryngol* 2001; 110(2):197–201.
12. Kenmochi M, Ohashi T, Nishino H, et al. A case report of difficult diagnosis in the patient with advanced laryngeal tuberculosis. *Auris Nasus Larynx* 2003; 30 Suppl:S131–S134.
13. Galli J, Nardi C, Contucci AM, et al. Atypical isolated epiglottic tuberculosis: a case report and a review of the literature. *Am J Otolaryngol* 2002; 23:237–240.
14. Gallas D, Coste A, Bedbeter P, Peynegre R. [Aspects actuels de la tuberculose laryngée. A propos de quatre cas et revue de la littérature] (French). *Ann Otolaryngol Chir Cervicofac* 1994; 111(4):201–207.
15. Harney M, Hone S, Timon C, Donnelly M. Laryngeal tuberculosis: an important diagnosis. *J Laryngol Otol* 2000; 114:878–880.
16. Shin JE, Nam SY, Yoo SJ, Kim SY. Changing trends in clinical manifestations of laryngeal tuberculosis. *Laryngoscope* 2000; 110:1950–1953.