

• CASE PRESENTATION •

A primary vocal cord tuberculosis; a possibility may be encountered during your career

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ABSTRACT

Tuberculosis (TB) is a communicable disease that is a major cause of ill health. It is one of the top 10 causes of death worldwide and the leading cause of death from a single infectious agent. The disease typically affects the lungs (pulmonary TB) but can also affect other sites (extrapulmonary TB). TB has been reported to occur in many parts of the human body but vocal cord involvement is extremely rare. Here, we present a rare case of vocal cord tuberculosis recorded in the National Tuberculosis Institute in Baghdad. The patient was presented with a history of hoarseness of voice and constitutional symptoms followed by stridor and upper airway obstruction that was treated by tracheostomy. The diagnosis was made histopathologically by demonstrating caseating epithelioid granulomas in the biopsy taken from the lesion plus positive tuberculin test. The screen of the patient for primary lung involvement with tuberculosis and HIV were negative. The patient was responding properly to 6 month course with 4 antituberculous drugs.

Key words: Tuberculosis, vocal cord, larynx, caseating granuloma.

INTRODUCTION

Tuberculosis (TB) is an infectious disease characterized by the formation of granulomas in the infected tissues. It is still one of the most contagious diseases worldwide¹ and it is the leading cause of death from a single infectious agent, ranking above HIV/AIDS.²

Extrapulmonary tuberculosis in the larynx is a very rare condition especially in the absence of a pulmonary TB lesion.³ It is reported that 0.5 -1 % of the primary laryngeal tuberculosis may cause upper airway obstruction in developing countries.⁴

Two theories are proposed to explain how the larynx get infected with TB bacilli. The first is the *bronchogenic theory* which states that the larynx can get infected through the direct spread of bacilli from pulmonary TB. The second is the *haematogen and lymphogen theory* which supposes that bacilli spread through haematogen and lymphogen routes from a pri-

mary infection lesion.⁵ However, secondary tuberculosis is always a complication of an active pulmonary tuberculosis which can be spread though direct contact with a sputum containing tubercle bacilli or via blood and lymph borne bacilli deposited locally.⁴

Presentation of tuberculosis of the larynx is variable and had changed over years. Symptoms and signs can be non-specific with a simple erythema to severe ulceration and mass lesions that resemble a carcinoma⁶ leading, unfortunately, to be misdiagnosed as malignancy. It is worth mentioning that laryngeal tuberculosis (LT) is the most common granulomatous disease of the larynx.⁷

Laryngeal TB can be treated successfully once diagnosed; however, it may cause irreversible fibrotic changes in the lamina propria of the vocal fold involved and may cause a permanent voice change.⁸

Patient with TB of the larynx is highly in-

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fectious to people in contact with them and to health care workers, so early diagnosis and proper management, in addition to stringent infection control is needed to prevent spread of TB through enhanced natural ventilation, using negative pressure patient isolation rooms (mechanical ventilation), using ultraviolet germicidal irradiation (UVGI) and high-efficiency particulate air (HEPA) filtration systems, in addition to wearing N95 respirators.⁹

CASE PRESENTATION

A 63-year-old male from city of Baghdad has been referred to the National Tuberculosis Institute from the ENT Department of the Medical City Complex in Baghdad to initiate anti-TB medication.

Patient's condition was started about 6 months before presentation as hoarseness of voice for which he consulted a physician who diagnosed him with a simple laryngitis on a basis of normal local examination and prescribed an antibiotic and anti-inflammatory medication that showed a partial improvement after few days. Thereafter, the patient started to complain of odynophagia with low-grade fever mainly at night associated with central neck pain and some sort of swelling and redness over the neck. An indirect laryngoscopy has shown an oedematous and red laryngeal wall with a nodular lesion involving the vocal cord.

Ultrasound examination of the neck showed evidence of a superficial thin-walled cystic lesion of 15x 10 mm with moving debris inside it suggestive of being a collection. No cervical lymph node enlargement was demonstrated.

The patient was known to have hypertension and diabetes mellitus for which he was using drugs with fair control. He was ex-smoker and reported neither history of tuberculosis in the past nor contact with a patient with pulmonary tuberculosis.

The patient's clinical condition has deteriorated with shortness of breath and stridor. Under surgical treatment, a tracheostomy tube was inserted, a biopsy was taken and the col-

lection was evacuated. The patient improved and discharged home on antibiotics waiting for the histopathological report.

The histopathological report showed multiple caseating epithelioid cell granulomas with frequent Langerhans type multinucleated giant cell and central necrosis surrounded by extensive mixed chronic inflammation and fibrosis, no malignant changes were seen. The picture was consistent with a chronic inflammatory lesion in favour of TB.

The patient referred to the National Tuberculosis Institute in Baghdad where the patient's profile was reviewed; a chest X-ray was done and showed accentuated bronchovascular markings in both lung fields with normal heart and bones. No signs of active pulmonary TB were evident, See **figure 1**. Tuberculin skin test was positive, so also the complete blood count and basic biochemical laboratory tests. The screen for HIV infection was negative.

The patient was recorded in the National TB program as extrapulmonary vocal cord TB and prescribed a 6- month course of antituberculous drugs started as 2 months initial phase with 4 tablets of combined fixed dose 4 drugs formula; Isoniazid 75 mg, Rifampicin 150 mg, Pyrazinamide 400 mg, and ethambutol 275 mg. Then followed by 4 months continuation phase with 4 tablets of combined fixed dose 2 drugs formula; Isoniazid 75 mg and Rifampicin 150 mg. On follow up, his condition was improved completely over a few weeks after treatment and the tracheostomy tube was removed few months later on.

DISCUSSION

The larynx is a cartilaginous segment of the respiratory tract located in the anterior aspect of the neck, it is about 4 to 5 cm in length and width, with a slightly shorter anterior-posterior diameter. The larynx is located at the level of C3 to C7 vertebrae and is held into position by muscles and ligaments. The blood supply to the larynx comes from the superior and inferior laryngeal arteries. Laryngeal veins accompany the arteries and take the same names. Larynge-



Figure 1 | Chest X ray of the patient before treatment showed accentuated bronchovascular markings, No signs of active pulmonary TB. Heart shadow and the bones are apparently normal.

al lymph drainage subdivides into supraglottic and infraglottic lymphatics. The larynx receives innervation by the inferior laryngeal nerve, the recurrent laryngeal nerve, and the superior laryngeal nerve.¹⁰

Although laryngeal TB is rare extrapulmonary tuberculosis,³ it should be kept in mind when dealing with laryngeal lesions especially in areas endemic with tuberculosis.¹¹ Early diagnosis will preclude the spread of infection. Laryngeal tuberculosis is one of the most frequent diseases causing granulomatous lesions in the larynx.¹² It is usually secondary to pulmonary tuberculosis; however, primary involvement of the larynx with a tuberculous process in the absence of pulmonary TB is rare.^{13,14} In our case, the patient's history and clinical examination were not suggestive of pulmonary involvement and his chest X-ray showed no signs of active tuberculosis. So, it is a case of primary laryngeal tuberculosis.

Tuberculosis isolated to the head and neck region is common in patients with HIV infection and should be considered in the differential diagnosis of all head and neck lesions in patients infected with HIV, even in the absence of pulmonary involvement.¹⁴ Our patient was immune-competent and his screen for HIV infection was negative.

The lesion in our case was in the vocal cord complicated by cervical collection. According

to Clery and Batsakis, localization in the anterior half of the larynx 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%).¹³

Hoarseness of voice with or without odynophagia, painful swallowing, associated with constitutional TB symptoms like fever, cough, weight loss and night sweats are suggestive of laryngeal tuberculosis. Lesions of the cord or cord immobility may produce hoarseness of voice. Stridor may also be the presenting feature of this disease.^{8,15} Similarly, Lim in his review of 60 patients who diagnosed with laryngeal TB in Severance Hospital in South Korea from 1994-2004, has found that 96.9 % of patients were presented with hoarseness of voice.¹⁶ The presenting feature of our patient were hoarseness of voice followed by odynophagia and low-grade fever.

Laryngeal tuberculosis can occur irrespective of the immunization status and the result of the tuberculin test. Some patients have been previously immunized with BCG and others have had a negative Montoux test,¹⁵ our case had received BCG and the tuberculin test was positive. A definitive diagnosis of laryngeal tuberculosis was usually made by direct laryngoscopy with biopsy for histopathological examination.¹³ Our case was also diagnosed by biopsy and demonstration of caseating granuloma histopathologically. A simpler method of diagnosis like AFB examination was not done because the diagnosis of laryngeal TB was not in the mind of the physician before the report of the histopathology.

TB vocal cord TB case can be discovered accidentally and if the diagnosis is not kept in mind, it may lead to an unnecessary and dangerous delay with a potential complication on the patient and epidemiological risk on the community. This was the case in our patient who was sadly presented with upper airway collection and obstruction that ended up with tracheostomy. Nevertheless, the patient responded to anti-TB drugs and the tracheostomy tube was removed later on. Late presenta-

tion with upper airway obstruction has been reported by Cole and colleagues¹⁷ and similarly, the treatment was with tracheostomy and anti-TB drugs.

CONCLUSION

Although it is a very rare TB presentation, vocal cord tuberculosis can be encountered during daily practice especially in a country endemic with tuberculosis like Iraq. Hoarseness of voice may be the only presenting symptom. Delaying diagnosis may lead to many complications that increase morbidity and probably mortality. In addition to the risk of transmission to other persons.

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Abbreviations list: Acid fast bacillus (AFB), Acquired immunodeficiency syndrome (AIDS), Bacillus Calmette-Guérin (BCG), Ear Nose and throat (ENT), High-efficiency particulate air (HEPA), Human immunodeficiency virus (HIV), Laryngeal tuberculosis (LT), Millimetre (mm), Tuberculosis (TB), Ultraviolet germicidal irradiation (UVGI).

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