



Laryngeal Tuberculosis Study

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Abstract

Laryngeal Tuberculosis (LT) is a rare disease that represents less than 2% of cases of extrapulmonary tuberculosis and is the most frequent granulomatous disease in the larynx. The diagnosis is possible from the histopathological and microbiological analysis of laryngeal lesion fragments obtained by biopsy. However, the recognition is often difficult due to the varied clinical symptoms, often, limited to dysphonia and odynophagia, while typical tuberculosis symptoms such as fever, cough and night sweats are absent. The purpose of the present study is to report a case of laryngeal tuberculosis in order to reduce under diagnosis rates and inappropriate treatment. In this study, a 39 year-old female presented at first only dysphagia and dry cough, no history of fever or weight loss, sputum culture negative for *Mycobacterium tuberculosis* and chest X-ray without signs of pulmonary involvement. However, patient underwent otorhinolaryngological evaluation through laryngoscopy, which revealed destructive, vegetative, infiltrative growth involving epiglottis, arytenoids, vestibular folds and bilateral aryepiglottic folds on the larynx; however, only received anti-inflammatory treatment, which did not relieve symptoms. After 6 months, the patient complained of fever, dysphagia, sialorrhea, and gagging, productive cough, dysphonia and weight loss of 26 pounds. One month later, histopathology of laryngeal biopsy revealed chronic granulomatous inflammation, suggesting tuberculosis. Thus, the patient was immediately started on the standard four-drug anti tuberculosis (anti-TB), evidencing on the follow-up symptomatically improvement with treatment. Even though laryngeal tuberculosis is a rare disease, every otorhinolaryngologist should be aware of its clinical characteristics to be able to suspect and conduct the case correctly.

Keywords: Extrapulmonary tuberculosis; Laryngeal tuberculosis; *Mycobacterium tuberculosis*; Dysphagia

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Introduction

Tuberculosis is the deadliest infectious disease caused by a single agent, even surpassing the Human Immunodeficiency Virus (HIV).

Approximately 70,000 new cases of tuberculosis were reported in Brazil in 2017. Of all the states, Pará has one of the highest coefficients of incidence and mortality [1]. The disease mainly affects the lungs, but other organs, such as the larynx, may also be targets of the *Mycobacterium tuberculosis bacillus*. However, Laryngeal Tuberculosis (LT) is a rare disease that represents less than 2% of cases of extrapulmonary tuberculosis [2].

LT is the most frequent granulomatous disease in the larynx. The *bacillus* can affect different areas in the organ, with varied clinical symptoms, which makes diagnosis difficult. Often, symptoms are limited to dysphonia and odynophagia, while typical tuberculosis symptoms such as fever, cough and night sweats are absent [3]. A tuberculosis diagnosis is rarely considered by otorhinolaryngologists, which delays diagnosis and consequently increases the rate of complications [4]. In addition, the uncommon presentation of the disease is easily confused with laryngeal cancer [5].

LT is especially seen in patients with a variety of risk factors, such as the presence of HIV infection, diabetes, smoking, alcoholism, drug abuse, malignancies and the use of immunosuppressive drugs. In addition, the disease primarily affects males, with a male-female ratio varying from 1.5:1.0 to 9:1 in past studies. Patients in their 50s and 60s are most commonly affected, with the same age distribution between men and women, although a significantly lower mean age has been previously observed among women with LT [6].

A diagnosis of LT is suspected based on clinical symptoms, epidemiological bases or if the

initial drug treatment fails. First, sputum and laryngoscopy tests are considered to be auxiliary methods for diagnosis. The final diagnosis is possible from the histopathological and microbiological analysis of laryngeal lesion fragments obtained by biopsy [7]. Laryngeal infections most often involve anterior structures of the larynx and are characterized by hypertrophy, exophytic and/or polypoid lesions. Vocal chords are affected in 50% to 70% of cases and false chords in 40% to 50% of cases. When severe infections occur, some key areas may become inflamed, causing air passage obstruction [8].

The treatment is based on anti-tuberculin therapy, which lasts for at least 6 months divided into two phases: the attack phase, which takes place in the first two months, in which use of the four main drugs (rifampicin, isoniazid, pyrazinamide and ethambutol) is recommended; and the maintenance phase, in the remaining four months, with two main drugs (rifampicin and isoniazid). The therapy may be altered if there is resistance to the recommended drugs. Surgical intervention may be necessary in patients with abscess formation or disease progression without response to drug treatment [1,7].

LT is an often under diagnosed condition, which leads to delays in beginning treatment and potentiates the capacity of dissemination; thus positioning it as a relevant public health problem. In order to reduce under diagnosis rates and inappropriate treatment, the present study emphasizes the clinical characteristics for the recognition of this form of extrapulmonary tuberculosis.

Case Presentation

P.M.S, 39 year-old female at first, in March 2018, she complained of dysphagia and dry cough. No history of fever or weight loss. The patient did not report any history of contact with sick people. Sputum culture was negative for *Mycobacterium tuberculosis* and chest X-ray showed no signs of pulmonary involvement. However, patient underwent otorhinolaryngological evaluation through laryngoscopy, which revealed destructive, vegetative, infiltrative growth involving epiglottis, arytenoids, vestibular folds and bilateral aryepiglottic folds on the larynx; however, only received anti-inflammatory treatment, which did not relieve symptoms. In September, presented to Castanhal's City Hospital and complained of fever, dysphagia, sialorrhea, and gagging, productive cough, dysphonia and weight loss of 26 pounds over the past 6 months. Blood examinations showed no abnormalities and she tested negative for HIV, hepatitis B and C, syphilis and leishmaniasis. One month later, histopathology of laryngeal biopsy revealed chronic granulomatous inflammation, suggesting tuberculosis. Thus, the patient was immediately started on the standard four-drug antituberculosis (anti-TB) therapy (isoniazid, rifampicin, ethambutol and pyrazinamide) for 2 months and then other drugs, with the exception of ethambutol and pyrazinamide, for 4 months. On follow-up, she had symptomatically improved and remained under anti-TB treatment.

Discussion

Laryngeal tuberculosis is a rare form of extrapulmonary tuberculosis, occurring in less than 1% of all cases, and is characterized as either primary, without lung involvement, or secondary, with lung involvement [9]. Secondary laryngeal tuberculosis is more common than primary in developing countries, where tuberculosis remains common, and occurs through bronchogenic, hematogenous or lymphatic dissemination from the lung [10].



Figure 1: Laryngoscopy image showing vegetative and infiltrative growth on the larynx.

In this case report, the patient showed laryngeal tuberculosis without signs of pulmonary involvement, presenting negative results on radiological examinations of the chest, negative sputum cultures and negative history. The patient also had no fever or night sweats. Those findings suggest that the laryngeal lesion is primary, with hematogenous spread from sites other than the lungs.

Epidemiologically, LT is more common in men around 50 to 60 years old in develop countries, but the patient in this case report is a 39 year old female [2]. Additionally, LTB is usually associated with conditions that lead to immunosuppression, for example pregnancy, HIV infection, advanced age, certain diseases or immunosuppressive treatments [9], but the patient showed no sign of immunosuppression, tested negative for HIV, hepatitis B and C, and syphilis and was not pregnant or elderly.

Usually, the period of time between the first symptoms and the diagnosis is 9.5 months [2]. In this case report, it was 6 months. The time gap can be explained by delayed referral to a specialized care center and to do essential exams such as laryngoscopy and laryngeal biopsy.

According to the literature, the most common symptoms of laryngeal tuberculosis nowadays are dysphonia, weight loss, cough, dysphagia and odynophagia. Hoarseness and fatigue may be present as well [11]. Usually fever, chills, night sweats, nausea, vomiting, and shortness of breath are absent; since secondary laryngeal tuberculosis has become less frequent and primary LT more frequent [12]. In this case report, the patient had fever, dysphagia, sialorrhea, gagging, productive cough, dysphonia and weight loss.

The diagnosis usually requires laryngoscopy and histopathology of laryngeal lesions. The laryngeal involvement normally shown in a laryngoscopy can be diverse: studies describe exophytic mass lesions, granulomatous lesions, erythema, edema, ulcerative lesions, and polypoid lesions [2,11]. The patient showed vegetative, infiltrative and destructive lesions involving the epiglottis, arytenoids, vestibular folds and bilateral aryepiglottic folds on the larynx. In the histopathology of laryngeal lesions, it is typical to find chronic granulomatous inflammation with or without caseous necrosis, findings compatible with those reported by the patient (Figure1) [8,12].

Compliance with Ethical Standards

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from the individual participant included in the study.

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