Tuberculous Laryngitis mimicking as Fungal Laryngitis: A Case Report

Cassius Kay G. Ramos, MD,[1] Jeremyjones F. Robles, MD[2]

Case Summary

Tuberculous laryngitis was considered common during pre-antibiotic area but after the effective antitubercular medication, the incidence of laryngeal tuberculosis had decreased to less than one percent[2]. Clinical presentation is mostly unclear but usually presents with odynophagia, cough, hoarseness of voice and frequently confused with other diseases, more importantly fungal laryngitis.

This is a case of a diagnostic dilemma of an immunocompetent 55-year-old male presenting with odynophagia, dysphagia and hoarseness of voice that was initially managed as a case of fungal laryngitis due to history of prolonged use of dexamethasone and findings of leukoplakia in laryngoscopy. Despite adequate time for treatment, no significant improvement was noted. Acid fast bacilli microscopy tested negative. A previous history of pulmonary tuberculosis treatment and chest radiographs revealing fibrosis on both upper lungs puts tuberculous laryngitis as one of the differentials. Sputum GeneXpert/RIF taken and tested positive, hence lead to the diagnosis of tuberculous laryngitis. Guideline-based quadruple anti-tubercular therapy started and had showed a positive response.

Laryngeal tuberculosis (LTB) requires a high index of suspicion since it mimics various laryngeal diseases such as fungal laryngitis or malignancy. Clinicians should always be aware of the atypical clinical features of laryngeal tuberculosis and the possibility of primary laryngeal tuberculosis, for early diagnosis and prompt treatment, thus preventing morbid complications. A positive mycobacterial culture along with a typical histopathological appearance remain the cornerstone of diagnosis, but sputum AFB in microscopy and GeneXpert/RIF must not be ignored as these can be cost-effective diagnostic alternatives.

Keywords: Fungal laryngitis, Laryngeal tuberculosis, Gene X-pert/RIF

Introduction

Tuberculosis (TB) is one of the top 10 causes of death worldwide. Millions of people continue to fall sick with TB each year.[1] The Philippines is among the top 8 countries worldwide where tuberculosis is widespread. Based on the 2016 National TB Prevalence Survey, about 1 million of Filipinos are diagnosed with TB. Most of the TB cases are found among males and prevalent among ages 45-54 years old.[2] Head and neck tuberculosis (HNTB) accounts for 10% of TB. Among the HNTB, laryngeal TB was considered a rare form of extrapulmonary tuberculosis with incidence estimated to be less than 1% of all TB cases[2]. Clinical presentation is mostly vague which includes odynophagia, hoarseness of voice and cough[3]. Being an uncommon site of involvement, in most cases it is often mistaken for malignancy, chronic laryngitis, epiglottitis or leukoplakia, and laryngeal tuberculosis is rarely considered. Early diagnosis is of utmost importance since laryngeal TB is considered extremely contagious, but on the other hand, is highly curable once diagnosis is established.[5]

The Case

This is a case of a 55-year-old male who presented with 2-weeks worsening of odynophagia, dysphagia, and hoarseness of voice (*Figure 1*). He self-medicated with dichlorobenzyl alcohol, amylmetacresol, and ascorbic Acid (Strepsils) 1.2mg/600mg/100mg/ per lozenges 1 lozenges every 4 hours but with no relief. Patient was initially seen by an Otorhinolaryngology specialist as

[1] Department of Internal Medicine, Cebu Institute of Medicine – Cebu Velez General Hospital, F. Ramos St., Cebu City, Philippines
[2] Section of Endocrinology, Diabetes and Metabolism, Department of Internal Medicine, Chong Hua Hospital, Cebu City, Philippines.
Corresponding author: Robles, Jeremyjones F. Robles E-mail: doc_jer_cebu@msn.com

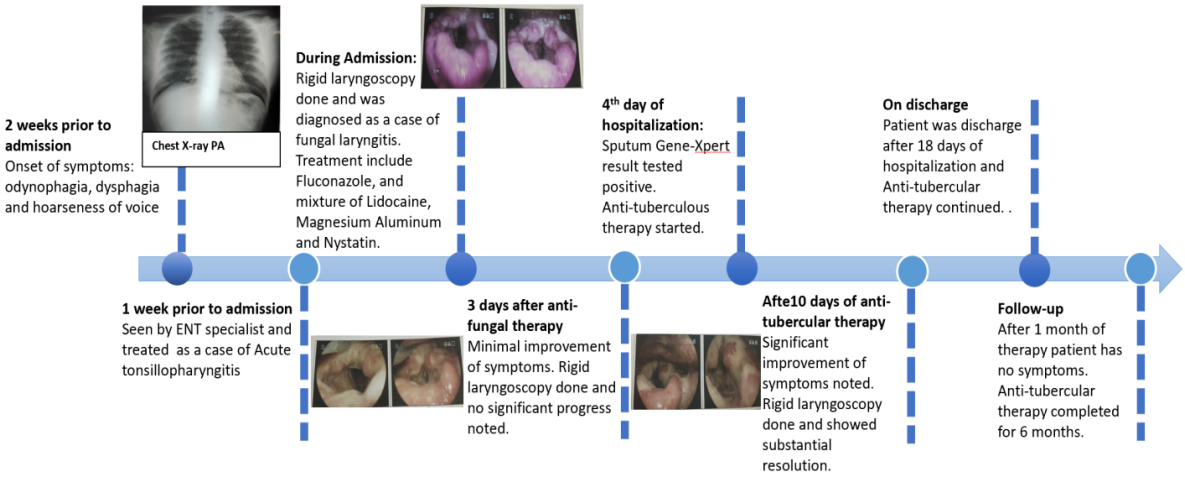

Figure 1. Timeline of the patient's course from the onset of symptoms until discharge and follow-up

outpatient and was treated as a case of acute tonsillopharyngitis, and was prescribed with clindamycin 300mg/ tab, 1 tablet 4 times per day and anise oil 7mg, bergamot oil 0.5mg, chamomile extract 370.5mg (*Kamillosan M*) sprayed at the posterior pharynx 3 times a day. After a week of treatment, symptoms worsen, now associated with inability to take anything *per orem*, hence opted consult and was subsequently admitted.

Fourteen years prior, patient had been diagnosed with Pulmonary TB smear positive and was able to complete the whole course of treatment. Repeat AFB smear after treatment showed negative result. Patient had been self-medicating for 6 months with dexamethasone (*Drenex*) 3mg 1 tab once daily, 3-5 times a week for his arthritis. Patient is hypertensive with good compliance and is a non-diabetic. He is an occasional alcoholic drinker, non-smoker and no history of illicit drug use. No relevant sexual and family histories were noted.

During hospitalization, physical examination revealed hyperemic tonsils and whitish exudates. There was no lymphadenopathy, no oral thrush and has clear breath sound on both lungs upon auscultation. Other physical findings were unremarkable. Chest X-ray revealed fibroids on both upper lung fields (*Figure 2*). Rigid laryngoscopy showed the following findings: Irregular vocal fold borders, diffuse whitish excrescences from supraglottic to subglottic area, weak left vocal fold mobility, copious endolaryngeal secretions, edematous supraglottic mucosa, incomplete glottic closure, and with evidence of penetration and aspiration (*Figure 3A*). Due to the history of prolonged steroid used and findings of leukoplakia in laryngoscopy, patient was initially treated as a case of fungal laryngitis. A mouth wash consisting mixtures of lidocaine 2% 20m/mL, 10 mL, magnesium + aluminum hydroxide (*Maalox*) 235 mg/mL 30 mL, and nystatin 10 mL was given three times daily. Antibiotics given were clindamycin 300 mg every 6 hours and fluconazole 200 mg IV then 50 mg tab daily were given. Additionally, paracetamol 500mg every 6 hours for pain relief and hydrocortisone 100 mg IV every 8 hours for lessening inflammation were administered. Nasogastric

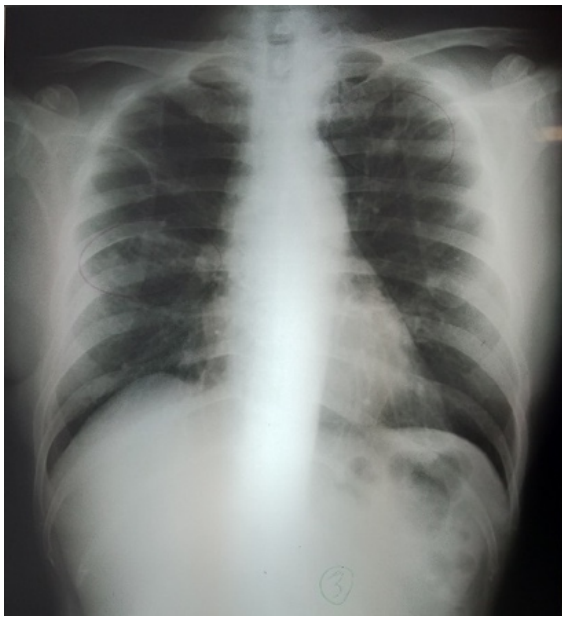

Figure 2. Chest X-ray PA. Fibroids are seen on both upper lung lobes

tube (NGT) was inserted to aid for patient's nutrition and medication administration. CBC showed leukocytosis but no neutrophilia nor lymphocytosis. Two AFB sputum smears were collected and came out negative.

After three days of anti-fungal therapy, minimal improvement of symptoms was noted. A repeat rigid laryngoscopy was done and revealed very minimal improvement from previous study. Other findings include intact vocal fold mobility, vocal cord hemorrhage, left, minimal decrease in swelling, still with whitish excrescences and incomplete closure of larynx (*Figure 3B*)**.** Therapy was continued and sputum Gene X-pert was taken.

Sputum Gene X-pert result tested positive for MTB with no rifampicin resistance detected. Diagnosis was then

shifted to Tuberculous laryngitis due to possibility of reactivation from the previous pulmonary tuberculous infection. Fluconazole, clindamycin, and a mixture of mouth wash medications were discontinued immediately. Anti-tubercular treatment consisting of rifampicin 150 mg, isoniazid 75 mg, pyrazinamide 400 mg and ethambutol 275 mg (HRZE), 4 tabs once daily before breakfast were started.

After 10 days of anti-tubercular treatment, patient noted improvement of symptoms and tolerated oral feeding. NGT was removed and a repeat laryngoscopy after 2 weeks of anti-TB meds was performed which showed improving appearance of vocal cord mucosa with residual left vocal cord paresis (*Figure 3C*). He was then discharged with improved condition after 18 days of hospitalization. Home medications include HRZE to complete two months and HR for four months. One month after treatment, patient followed up with resolving symptoms.

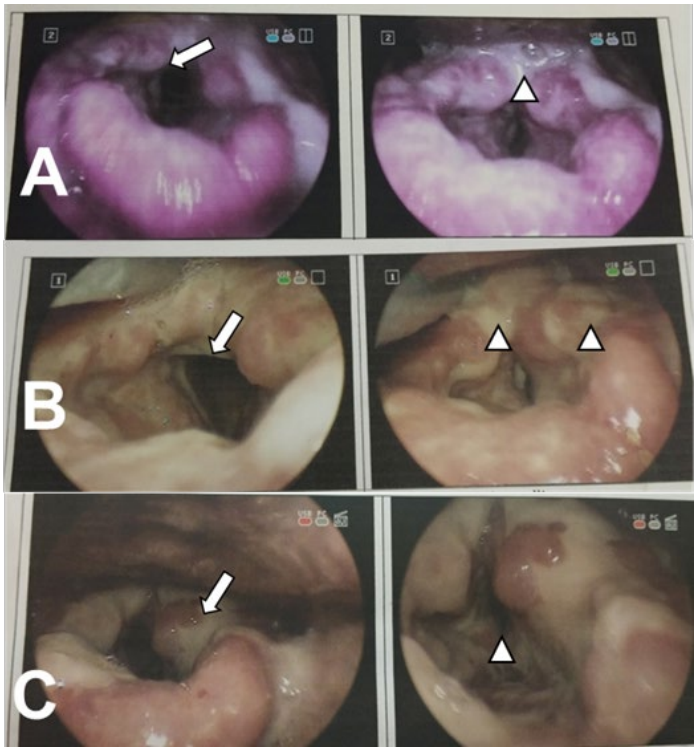

Figure 3A. Rigid Laryngoscopy on admission. Irregular vocal fold borders, diffuse whitish excrescences from supraglottic to subglottic area (see arrow), copious endolaryngeal secretions and edematous supraglottic mucosa (see arrow head)

Figure 3B. Rigid Laryngoscopy after 3 days of anti-fungal therapy. Intact vocal fold, with vocal cord hemorrhage (see arrow) Minimal decrease in swelling but till with whitish excrescences (see arrow head)

Figure 3C. Rigid Laryngoscopy after 2 weeks of Anti-TB medications. Improving appearance of vocal cord mucosa (see arrow). Incomplete closure of vocal cord, left and residual secretions (see arrow head)

Discussion

Tuberculosis has increasingly been reported in the past few decades, however, laryngeal tuberculosis (LTB) remains a rare type of extrapulmonary TB which leads to diagnostic dilemma for many doctors.[2] LTB may present with no specific pathognomonic sign, have less severe systemic symptoms, and have negative results for some tubercular tests.[4] It is usually seen as a complication of pulmonary tuberculosis, however at times, it may involve the larynx alone.[5]

Laryngeal tuberculosis frequently infects ages 25 to 78 years, with high incidence in 40s-50s, and with male predominance.[6] Risk factors identified include alcoholism, tobacco abuse, malnutrition and immunodeficiency.[8,9] The most common symptom associated with laryngeal tuberculosis is hoarseness of voice that may be accompanied by odynophagia, dysphagia, cough, otalgia, and stridor[6].LTB is a great masquerader that mimics other laryngeal disease including laryngeal carcinoma, epiglottitis, and fungal laryngitis.[10]

White patches adherent to the laryngeal mucosa, commonly termed as leukoplakia, with mucosal edema and erythema seen during laryngoscopy are commonly seen in fungal laryngitis.[10] Nonetheless, whitish ulcerative lesions, non-specific inflammatory lesions, polypoid lesions, and ulcero-fungative mass lesion are also commonly observed lesions in laryngeal tuberculosis.[9] Therefore, this stresses the necessity of considering the possibility of tuberculosis as a differential diagnosis when these types of laryngeal lesions are noted.

Chest radiograph frequently shows abnormalities as this is often associated with pulmonary tuberculosis.[15] Sputum microscopy, which is widely used has a low sensitivity, and is positive in only20% of TB patients.[8] GeneXpert MTB/RIF assay, an integrated diagnostic device for the diagnosis of tuberculosis and rapid detection of RIF resistance in clinical specimens has gain popularity nowadays. According to the results of the study done by Zeka A, Tabakan S et al. on determining performance of the MTB/RIF assay for rapid diagnosis of tuberculosis, the sensitivity of the MTB/RIF test was 70% (77/110), the specificity was 100% (319/319), the negative predictive value (NPV) was 90.6% (319/352), and the PPV was 100% (77/77), hence, making this test as an optimal initial diagnostic tool. For pulmonary specimens, the sensitivity and specificity of the MTB/RIF test were 82.3% and 100%, respectively.[11] The definitive diagnosis of tuberculosis is made by isolating *Mycobacterium tuberculosis*. Biopsy of larynx lesion is not usually done once lung tuberculosis has been confirmed,

since a biopsy is not appropriate or necessary in the presence of large number of bacteria.[12]

The basic principles that underlie the treatment of pulmonary tuberculosis also apply to extra-pulmonary forms of the disease. The 2016 Clinical Practice Guidelines for the Diagnosis, Treatment, Prevention and Control of Tuberculosis in Adult Filipinos, strongly recommends treatment of tuberculosis in general with multidrug anti-tuberculous chemotherapy consisting of 2 months Isoniazid (H), Rifampicin (R), Pyrazinamide (Z) and Ethambutol for intensive phase followed by four months HR regimen as maintenance phase.[13] Laryngeal tuberculosis is known to show favorable anti-tuberculous response.[14] In most cases, symptoms improve within several weeks and the larynx recoverswithin several months.[13] However, in cases where there was a delay of diagnosis thus delayed treatment, laryngeal stenosis and cricoarytenoid fixation may occur, hence surgical treatment may be necessary.[15]

Conclusion

Laryngeal tuberculosis (LTB) requires a high index of suspicion since it mimics various laryngeal diseases such as fungal laryngitis or malignancy. Clinicians should always be aware of the atypical clinical features of laryngeal tuberculosis and the possibility of primary laryngeal tuberculosis, for early diagnosis and prompt treatment, thus preventing morbid complications. A positive mycobacterial culture along with a typical histopathological appearance remain the cornerstone of diagnosis, but sputum AFB in microscopy and GeneXpert/RIF must not be ignored as these can be cost-effective diagnostic alternatives.

Conflict of Interest: The authors declare that there is no conflict of interests.

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