



Localized Laryngeal Amyloidosis Successful Treatment with Systemic Therapy — A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. Author RA wrote and conceptualized the first draft of the manuscript. Authors HS, HE and ABA managed the editing together with additional idea and information. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Amyloidosis is a rare idiopathic extracellular deposition of an amorphous amyloid substance in tissues which ultimately leads to organ malfunction and failure. Clinically, amyloidosis is divided into 2 categories; systemic and localized. Localized amyloidosis is rare and clinical presentation is variable and often non-specific ranging from simple hoarseness, dysphagia and bleeding to lethal airway obstruction, depending on size and location of the amyloid deposition.

The main treatment for laryngeal amyloidosis is by surgical intervention, however medical treatment is an option in certain case. We reported a case of patient presented with hoarseness and been diagnosed as laryngeal amyloidosis. As the patient refused for surgical intervention, he was treated with oral thalidomide. After five years of close follow-up, patient shows improvement with no evidence of disease progression or airway compromise.

Keywords: Hoarseness; laryngeal amyloidosis; thalidomide.

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1. INTRODUCTION

Amyloidosis is a group of disorders characterized by deposition of proteinaceous fibrils in tissues [1]. It is related to the extracellular deposition of an amorphous amyloid substance in various tissues with characteristic microscopic, histochemical, and ultrastructural features. The distribution of the amyloid deposits can be systemic or localized. Isolated laryngeal amyloidosis is rare, accounting about 0.2 to 1.2% of benign tumors of the larynx [2]. All subsite of laryngeal regions which are supraglottis, glottis and subglottis can be affected [3]. The most prominent clinical finding in laryngeal amyloidosis is progressive dysphonia, hoarseness, dyspnea, cough, stridor, odynophagia, and, rarely, hemoptysis [3-5]. The condition is chronic and slowly progressive. The aim of treatments of laryngeal amyloidosis is to maintain or improve voice quality and to maintain laryngeal airway [3]. The aim of treatment of laryngeal amyloidosis are maintaining airway patency and voice quality [6]. In case of patient refused surgical intervention with localized endoscopic excision as the mainstay of treatment, medical or conservative treatment is one of the options.

2. CASE REPORT

A 41 years old, healthy man, presented with hoarseness for 3 years duration. There was no associated difficulty in swallowing or shortness of breath. Endoscopy showed right anterior 2/3rd of aryepiglottic fold, edematous arytenoid with yellowish deposition at right posterior arytenoid and limited right vocal fold mobilization. A contrast enhanced computed tomography (CT) scan neck of the patient shows soft tissue mass involving transglottic area with involvement both and posterior commissures. There was thickening of right thyroarytenoid muscle and aryepiglottic fold with obliteration of paraglottic fat and erosion of bilateral thyroid cartilages. Biopsy of the mass showed evidence of amyloidosis which was later confirmed by immunohistochemical studies. Histological study showed of an amorphous eosinophilic material stained with Congo red with a dichroic appearance and a characteristic yellow-green under polarized light. The immunohistochemical stains was positive for amyloid P component and A-Light chain. General clinical examinations were unremarkable. The full blood picture, liver function test, erythrocyte sedimentation rate, electrocardiogram were normal. Renal function tests showed pathological urine sediment or

proteinuria, with normal creatinine level. Serum, urine electrophoresis and light chain assay revealed normal result. The patient underwent an esophagogastroendoscopy and colonoscopy with biopsies and pathology showed no abnormalities. Cardiac magnetic resonance imaging (MRI) was normal. Localized laryngeal amyloidosis without systemic location thus concluded as the diagnosis. Patient was counselled for surgical intervention, however patient refused for family issue. Thus, he was then started with thalidomide 50 mg daily by hematology team for two years before it was off. During five years of close follow-up, patient had had improvement in quality of voice with no evidence of disease progression or airway compromise.

3. DISCUSSION

The first case of laryngeal amyloidosis has been reported by Burow and Neumann in 1875 [7]. It may appear at any age, especially between 40 to 60 years with a male predominance in the ratio of 2:1 over woman [8]. Immunoglobulin light chain (AL) amyloidosis is characterized by a clonal population of bone marrow plasma cells that produce a monoclonal light chain of κ or λ type as either a fragment or an intact molecule. The light chain protein misfolds and forms a β -pleated sheet, instead of conforming to the α -helical configuration. The β -pleated sheet configuration is responsible for positive staining with Congo red when viewed under polarized light, and this staining is required for the diagnosis of AL amyloidosis [9]. This insoluble protein deposits in tissues and will interfere with organ function. Laryngeal amyloidosis is rarely isolated. Laryngeal amyloidosis need to be treated because untreated cases can progress to vocal fold fixation, severe dysphonia, and airway obstruction. Surgery is the mainstay of treatment of laryngeal amyloidosis via endoscopic surgery primarily by CO2 laser. In certain cases that refused surgical intervention, patient will be treated medically. Patients should be considered for stem cell transplantation, or trials of systemic chemotherapy. The active agents include corticosteroids, alkylating agents, immunomodulatory drugs and proteasome inhibitors [10]. Treatment for amyloidosis is highly individualized, determined based on age, organ dysfunction, and regimen toxicities. It also needs to be guided by hematologic biomarkers and cardiac response.



Fig. 1. Fiberoptic assessment showed yellowish mass over right anterior 2/3rd of aryepiglottic fold and bilateral arytenoids with limited right cord mobility

Alkylator-based chemotherapy is effective in almost two thirds of patients [11]. The actual mechanism of action for thalidomide is unknown, but possible mechanisms include anti-angiogenic and oxidative stress-inducing effects. It also inhibits TNF- α , IL-6, IL-10 and IL-12 production, modulates the production of IFN- γ and enhances the production of IL-2, IL-4 and IL-5 by immune cells. It increases lymphocyte count, co stimulates T cells and modulates natural killer cell cytotoxicity. Furthermore, It also inhibits NF- κ B and COX-2 activity [12]. Median overall survival from the start of therapy was 41 months, median progression-free survival was 32 months, and treatment-related mortality was 3%.

Current recommendations suggest starting thalidomide at a dose not higher than 50 mg, and the dose can be increased if tolerated [12].

The survival of patients with laryngeal amyloidosis often exceeds ten years; it seems to be much better than in patients with systemic amyloidosis. Although surgical excision is the choice of treatment, medical treatment may also be beneficial in certain cases. Yearly follow-up is recommended for at least 10 years and the possible development of systemic disease should be advocated [13].

4. CONCLUSION

Isolated laryngeal amyloidosis is rare. However, we would advocate it to be considered as a differential in patient presented with laryngeal mass. Even though occasionally found in association with systemic amyloidosis, it may be the first site of involvement. Although surgical excision is the choice of treatment, medical

treatment may also be beneficial in even in case of localized laryngeal amyloidosis. Long-term follow-up is needed to disclose recurrent, residual, complication, or development of the disease.

CONSENT

As per international standard or university standard, patient's consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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