LARYNGEAL AMYLOIDOSIS: A RARE CAUSE OF HOARSENESS

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ABSTRACT

Objective: *To evaluate the presentation and management of laryngeal amyloidosis, a cause of hoarseness.*

Material and Methods: *This descriptive study was conducted at Postgraduate Medical Institute Hayatabad Medical Complex, Peshawar over a period of 12 years from Jan, 1996 till Dec 2007. During this period 292 patients admitted with hoarseness at ENT Department HMC, Peshawar were managed. Out of these 21 patients suspicious of laryngeal amyloidosis were included in the study.*

Results: *The presenting complaints were hoarsensess, sorethroat and dyspnea on exertion. All patients were of male sex with age ranged from 45-65. Surgical treatment was given to all cases.*

Conclusion: *Amyloidosis can involve the larynx presenting with hoarseness. Patient should be evaluated for systemic diseases. Site, size and extent of disease can be evaluated with axial C.T scan and the different treatment option decided accordingly.*

Key words: *Hoarseness, Amyloidosis, Larynx.*

INTRODUCTION

Hoasrseness is defined as roughness of voice resulting from variation of periodicity and or intensity of consecutive sound waves. For production of normal voice the vocal cord should

1. Be able to approximate properly with each other.
2. Have proper stiffness.
3. Have an ability to vibrate regularly in response to air column.

Any condition which interferes with these functions cause hoarseness[1]. Amyloidosis is a term used to describe a collection of proteineous material that has certain microscopic characteristics.[1,2] The term amyloid was first used by Virchove in 1851[2,3], because of its starch like reaction when treated with iodine and sulfuric acid. However this material was first identified by Von. Rokintansky in spleen and liver in 1842. laryngeal amylodosis was first recognized by Burow and Neuman in 1875 at necropsy. From then onward till 1990, more than 300 cases of laryngeal amyloidosis have been reported in literature[4].

Amyloidosis can present in several forms as described in the classification of Symmers[3] (Table-I). Primary amyloidosis is associated with multiple myeloma and heriditory or familial amyloidosis. In systemic or generalized form, amyloid is deposited in many organ systems and life expectancy is shortened[5].

Localize amyloidosis can involve a single abdominal organ (Liver, Kidney, Spleen, Bladder) or more rarely, the head & neck regions[6,7]. In the later rare location, larynx is the most common site. The work up for systemic involvement in localized head & neck amyloidosis is often negative & life expectancy is not affected unless an enlarged laryngotracheal lesion goes undetected[5].

The objective of this study was to evaluate the presentation and management of laryngeal amyloidosis.

MATERIAL AND METHODS

A prospective study was conducted at the ENT, Head & Neck Department of HMC from January 1996 till December 2007.

CLASSIFICATION OF AMYLOID

Type	Fibril Protein Precursor	Clinical Syndrome
AA (secondary)	Serum amyloid A	Reactive systemic amyloidsis associated with acquired or hereditary chronic inflammatory diseases
AL (primary)	Monoclonal Immunoglobulin or light chain	Systemic amylodosis associated with myeloma, monoclonal gammopathy, occult dyscrasia. Also found in localized amylodosis.
ATTR	Transthyretin	Senile systemic amylodosis familial amyloid polyneuropathy
AB2M	B2Microglobulin	Periarticular and occasionally systemic amylodosis polyneuropathy
AB	B-Protein precursor (and rare genetic variants)	Cerebrovascular and intracerebral plaque amyloid in Alzheimer's disease, occasional familial cases.
AIAPP	Islet amyloid polypeptides	Amyloid in islets of langrhans in type II diabetes melliyus and insulinoma

Table 1

During this period 292 patients with hoarseness were admitted to ENT unit for management. Out of these 21 patients admitted with suspicion of laryngeal amyloidosis on clinical examination with IDL were included in the study. Patients of all age group were entered. Patients with other laryngeal pathalogises causing hoarseness and who did not come for follow up were excluded from the study.

All suspected patients underwent micro-laryngoscopy and the tissues removed were sent for histopathology. In 12 out of 21 cases of laryngeal amylodisis, the initial report was non-specific granuloma. Investigations like X-ray chest, sputum for AFB, C.ANCA were done to exclude other granulomatous lesions. Congo red staining and examination under polarized light confirmed the diagnosis of laryngeal amylodosis. CT scan was done in all cases to ascertain the localization and extent of laryngeal lesions and to rule out extra laryngeal infiltration.

Resection of the lesion was carried out with micro-laryngoscopy. In all patient, endoscopic forceps/laser resection of the lesion were carried out. Laryngofissure was reserved for recurrent cases. All patients were subjected to repeated laryngoscopic examination to exclude the presence of recurrence over two years period.

RESULTS

A total of 292 patients with hoarseness were studied during this period. Out of these 21 came out to have laryngeal amyloidosis (Table-II) of which 3 were from South of NWFP and the rest came from Afghanistan. We did not receive any patient from urban area. All patients were male with age range from 45-65 years.

The presenting complaints in all these 21 patients are shown in Table-III. The duration of symptoms varied from 6-12 months. All the patients were worked up for systemic involvement with the help of physician including Bone Marrow and rectal biopsy when necessary. None of the patients were having systemic involvement. All patients underwent surgical treatment i.e. microlaryngoscopy and laser under general anaesthesia. Laryngofissure was performed in patients which recurred despite repeated laser application. All patients were followed up for two years period.

DISCUSSION

Amylodosis of the larynx is a rare usually benign process, but is the most common site for

CAUSES OF HOARSENESS

Causes	No of patients	%age
Vocal Nodule	73	25.79
V. Cord Polyp	47	16.60
V. Cord Palsy	28	9.89
Laryngeal Papillomatosis	24	8.48
Functional Causes	13	4.59
Laryngeal amyloidosis	21	4.24
Puber Phonia	09	3.18
Reinke's Oedema	07	2.47
Laryngeal tuberculosis	03	1.06

Table 2

isolated amyloid deposits in the head and neck region. Localized amyloid deposits has been seen in other head and neck sites including the oral cavity, pharynx, nose, sinuses, eyes and tracheobronchial tree. In contrast to other head and neck location, lingual amyloid is frequently associated with primary systemic or myeloma related amyloidosis[8,9].

The actual etiology of amyloid desposits in the aerodigeserive tract is unknown, but the understanding of the biochemical makeup of amyloid has been greatly improved. This has led to the classification scheme based on histochemical features of its protein subunits[9] (Table-I). when the diagnosis of laryngeal amyloidosis is made , work up should include studies to rule out systemic diseases. Multiple myeloma, rheumatic diseases and tuberculosis are some of the important causes that must be considered[10,11,12]. Amylodosis associated with familial syndromes and endocrinopathies such as medullary thyroid carcinoma must be investigated[13]. It behaves like a benign tumour when confined to one site and accounts for less than 1% of benign laryngeal neoplasm.

In our study, all patients with laryngeal amyloidosis were male with age range of 45-65 years. Male predominance has also been reported in literature although in kenedy studies of laryngeal amyloidosis, 4 out of 5 were female10,11. The presenting features in our patients were hoarseness and sore throat in all patients, dyspnea in 3 cases and dysphagia in one patient. These features have also been reported in literature. Other symptoms reported like aspiration, fullness in throat and globus like sensation were not seen in any patient[16]. In 12 out of 21 cases the lesion was confined to the superaglottic area with false cords as the main site while in rest of the 9 cases the amyloid presented as polypoid mass on the true vocal cords.

Some authors have stated that the most common location is at the true vocal cords level. But after going through the literature, it seems without question that supraglottic larynx at the level of false cords is the most common site in isolated laryngeal amylodosis[11,13,17]

The initial histopathology report may suggest as non-specific granulation or foreign body reaction and it may not be until after the tissue section are properly analyzed and stained that amylodisis is considered[18].

In our study also the initial biopsy report in first 12 cases came as non-specific chronic granuloma. It was after all other investigations came negative for granulomatous conditions, that amylodosis was confirmed with special staining.

Treatment of laryngeal amylodosis as previously proposed in the literature was based on the use of steroids, immunosuppressants, radiation therapy and treating symptomatic lesion only. Howeve these treatment approaches were unsatisfactory and are now completely abandoned[9,19].

At present most authors agree on surgical treatment[20,21] however the type of surgery to be performed remains controversial. The surgical options reported in the literature include endoscopic forceps removal, laser, laryngofissure and total laryngectomy in advanced cases[22].

In our study, the main stay of treatment was micro-laryngoscopy. The amyloid was removed using forceps in 9 patients with disease limited to true cords while laser was used for lesions of supraglottic larynx. 9 patients (100%)

PRESENTING COMPLAINTS

Presenting Complaint	No of patients	%age
Hoarseness	21	100
Sore throat	21	100
Dyspnea on Exetain	6	25
Dysphagia	2	10

Table 3

TREATMENT OPTIONS

No. of cases	Treatments Option	%age
13	Endoscopic removal/Laser	75
7	Laryngofissure	25

Table 4

of (vocal cord lesions) treated with forceps and 7 patients of supraglottic lesions treated with laser application came with recurrence in 6-9 months period and were subjected to laser therapy again All patients of glottic lesion treated with laser did not show any sign of recurrence during followup period while 7 patients with supraglottic lesions came with recurrence for 2nd time and the lesions were removed through laryngofissure. Kennedy & Patel have suggested the need for an external approach to remove the entire lesion radically as initial endoscopic foreceps/ laser surgery did not allow complete excision. They presented more than 90% results for open approach. However, Gaetano Motta etall strongly support endoscopic laser surgery for vocal cords lesions with cure rate of 75% in their patients[9,10]. Similarly in our study, laser application gave 100% cure rate for glottic lesion but for supraglottic, the recurrence rate after repeated laser application was 58.33%. In our series of 12 patients with supraglottic lesion, no patient came with recurrence after laryngofissure during two years followup period. Subjective improvement in symptoms was achieved in all patients. This surgical procedure is more cost effective and gave good result than repeated endoscopic procedures for supraglottic amyloidosis.

CONCLUSION

Laryngeal amyloidosis, though rare, should be considered as an etiological factor in work-up for causes of hoarseness especially when the gross appearance of the lesion suggests a submucosal mass and histopathology report comes as non-specific granulation tissue. It usually indicates a localized disease with systemic involvement uncommon. After the diagnosis a CT Scan with axial and two diamensional reconstruction seems to offer a better assessment of amyloid involvement. Management depends upon the site and severity of symptoms. Laser application should be the first line of treatment option for glottic while laryngofissure should be carried out for large supraglottic lesions.

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