

FREQUENCY OF MAJOR CAUSES OF LEFT VOCAL CORD PARALYSIS

Majid Dastgir, Kashif Obaid Khan Niazi*, Muhammad Ali**, Saad Bin Qamar**, Shahzad Nayyar***

Combined Military Hospital Zhob Pakistan, *Combined Military Hospital Khuzdar Pakistan, **Combined Military Hospital Malir Pakistan, ***Combined Military Hospital Bahawalpur Pakistan, ****Combined Military Hospital Rawalpindi Pakistan

ABSTRACT

Objective: To determine the frequency of different causes of left vocal cord paralysis in patients reporting in a tertiary care set up.

Study Design: Descriptive cross sectional study.

Place and Duration of Study: This study was conducted at Combined Military Hospital Rawalpindi from Jan 2008 till Jan 2013.

Patients and Methods: A total of 74 diagnosed cases of left vocal cord paralysis who consented to participate and fulfilling the inclusion criteria were included in this study. All patients were diagnosed by indirect laryngoscopy supplemented by flexible nasopharyngoscopy whenever required. After detailed history and physical examination every patient was investigated in a sequence till confirmation of any pathology or exclusion of any underlying factor. Sequence of investigations were X-ray chest PA view, Barium swallow, Ultrasound neck, CT scan with contrast from base of skull to diaphragm, FNAC whenever required, panendoscopy under general anesthesia and biopsy.

Results: The commonest cause identified was malignancy in 20 cases (27%), followed by iatrogenic trauma 18 cases (24.3%), idiopathic 14 (18.9%), non surgical trauma 13 (17.5%) and miscellaneous causes that accounted for 9 cases (12.1%).

Conclusion: Left vocal cord paralysis is a common entity in ENT practice with multiple etiologies. An extensive protocol for investigation is required. Protocol should include USG, CT scan from base of skull to diaphragm because malignancy is still the most frequent cause of left vocal cord paralysis.

Keywords: Hoarseness, Left vocal cord paralysis, Recurrent laryngeal nerve.

INTRODUCTION

Vocal cord paralysis (VCP) is a frequently seen clinical problem that comes to the internist's attention in otolaryngology clinics. Paralysis of one or both vocal cords is usually due to a lesion involving the vagus somewhere in its course. Vagus nerve supplies the motor innervations to the intrinsic muscles of the larynx by way of paired superior and recurrent laryngeal nerves. Usually, the left side is more affected than the right due to its longer course, as the left recurrent has to travel down and hook around the arch of aorta.

A number of well-known disorders, diseases and surgical sequel can cause VCP. Common causes of VCP in adults include iatrogenic (thyroid, radical neck and mediastinal surgeries), malignancies of lung, esophagus, thyroid, lymphoma and metastatic

carcinomas, trauma; brain injuries and chronic inflammatory conditions like tuberculosis.

Unilateral VCP is a common disorder seen in the practice of otolaryngology. Incomplete vocal fold adduction in unilateral vocal fold paralysis may cause formation of a constant glottic gap, which is usually associated with hoarseness and aspiration during swallowing¹.

An extensive protocol for investigating the cause, and a regular follow-up is important in case of idiopathic unilateral vocal fold paralysis due to the risk of undiagnosed sub clinical tumor.

PATIENTS AND METHODS

This cross sectional descriptive study was conducted at department of ENT, Combined Military Hospital, Rawalpindi between Jan 2008 till Jan 2013. All diagnosed patients of left vocal cord paralysis who consented to participate, were included in this study irrespective of their age or gender. Patients having bilateral vocal cord paralysis, right vocal cord paralysis and fixed left vocal cord due to some growth were excluded from study.

Correspondence: Dr Majid Dastgir, Graded ENT Specialist, CMH Zhob, Pakistan

Email: dr.majid24@gmail.com

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Informed consent was taken on a specially designed performa explaining the protocol of the study. As an institutional policy, anonymity and confidentiality of the participants and the collected data was ensured. Study design was approved by hospital ethical committee.

A total of 74 patients who fulfilled the desired criteria were included in this study. Data had been entered in SPSS version 19 for analysis. Frequency and through non probability per passing senility gendered percentage of different factors causing left VCP were calculated. All patients were diagnosed by indirect laryngoscopy supplemented by flexible nasopharyngoscopy whenever required. All patients were evaluated by detailed history, physical examination and investigations. Every patient was subjected to a sequence of investigations till confirmation of any pathology or exclusion of any underlying factor. Sequence of investigations were X-ray chest (PA view), Barium swallow, Ultrasound neck, CT scan with contrast-base of skull to diaphragm, FNAC if required, Pan endoscopy under general anesthesia and biopsy. Patients were followed regularly in ENT OPD till the final diagnosis; and their contact numbers were taken for follow-up.

RESULTS

Total of 74 patients were identified with left VCP. Out of these 45 (60.8%) were males and 29 (39.2%) were females. Mean age of presentation was 44 years. Out of 74 patients, the commonest cause of left vocal cord paralysis identified in our study was malignancy accounting for 20 (27%) cases, followed by iatrogenic trauma 18 (24.3%) cases, idiopathic 14 (18.9%), non surgical trauma 13 (17.6%) cases and miscellaneous causes accounted for 9 (12.2%) cases.

The contribution of different malignancies in our study is shown in Table II.

Surgical trauma caused left VCP in 18 cases (24.3%). Amongst them 9 cases (50%) were post thyroidectomy, 1 (5.6%) patient underwent neck dissection, 1 (5.6%) patient had carotid end arterectomy and 7 cases (38.9%) were reported after thoracic surgeries including

pneumonectomy², mediastinal biopsy¹, cardiac surgery², esophagectomy².

In miscellaneous category the commonest cause was tuberculosis, followed by aortic aneurysm, 2 cases and one case had enlarged (n=6) left auricle.

DISCUSSION

Our study revealed that malignant tumors of head and neck and chest are the commonest (27%) cause, followed by trauma (24.3%). Commonest tumor in our study was Carcinoma Lung (50%) followed by Carcinoma Esophagus (20%), Carcinoma thyroid (15%), Metastatic Neck node (10%) and Lymphoma (5%).

Myssiorek, in his study revealed malignant etiology causing VCP are: thyroid 41%, lung 30%, esophagus 20%, mediastinal 4%. The overall frequency of non laryngeal tumors causing vocal cord paralysis in his study were 17-32%³.

Malignancy was the causative factor of left vocal cord paralysis in 32% cases in a study conducted by Ramadan et al⁴, while it was 22%, 52.8% and 29.9% in other studies⁵⁻⁷.

Surgical trauma is one of the major causes of injury to recurrent laryngeal nerve. Surgical procedures involving base of skull, neck and mediastinal region can cause this damage. This damage can occur either from thermal injury, stretch, cutting, compression or vascular compromise. We found 18 cases (24.3%) of left VCP as a result of surgical trauma. Out of 18 patients, 09 cases (50%) were post thyroidectomy, 01 underwent neck dissection, 01 patient after carotid end arterectomy and 07 cases (38.8%) reported after thoracic surgeries which included pneumonectomy, mediastinal biopsy, cardiac surgery, esophagectomy².

In a study conducted by Hui Chen Ko et al, 48% cases were having VCP due to surgical trauma out of which 70% were after neck surgery and 17% had mediastinal surgery⁸. Majority of these cases 65% were post thyroidectomy. In another study, conducted by Myssiorek³, 28% cases were having RLN damage after thyroidectomy, 13% after neck dissection, 31% after pneumonectomy and lobectomy. In literature, there are cases in which vocal cord dysfunction was seen after end

tracheal intubation during general anesthesia but we did not find such case^{9,10}.

In 1995, Ross et al, found 8.8% cases having left VCP postoperatively after surgical closure

RLN can be damaged as result of external trauma which may occur due to external compression, bullet injury, mine blasts, strangulation cases. In Pakistan there is a slight

Table-1: Showing causes of left vocal cord paralysis (n=74).

S.No	Causes	Total cases	Percentage %
1.	Malignancy	20	27
2.	Iatrogenic	18	24.3
3.	Idiopathic	14	18.9
4.	Traumatic	13	17.5
5.	Miscellaneous	9	12.1

Table-2: Malignant etiology of left vocal cord paralysis (n= 20).

Malignancy	Cases	Percentage	Male	Female
Carcinoma lung	10	50%	7	3
Carcinoma esophagus	4	20%	2	2
Carcinoma thyroid	3	15%	1	2
Metastatic neck node	2	10%	2	-
Lymphoma	1	5%	1	-

of patent ductus arteriosus¹¹. Similarly 30%⁴ and 47.6%¹² cases of left vocal cord dysfunction were found due to iatrogenic etiology in other studies.

The cause of vocal cord dysfunction remains undiagnosed in a number of cases and named as idiopathic. Although careful workup and investigations are applied for diagnosing cause of VCD but certain number of cases lie in category of idiopathic. Even in these cases recovery to normal mobility is also seen. In our study 14 cases (18.9%) remained undiagnosed after all investigations.

In a study conducted by Andrew et al, 18.1% cases of VCP were idiopathic, amongst them more than half were on left side (24 on left and 11 on right). In mean time of 5 months 22.8% cases of idiopathic vocal cord dysfunction resolved¹³. In another study, 21.7% of UVCP cases were attributed to idiopathic cause⁸. Dworkin studied 35 cases of idiopathic vocal cord dysfunction, spontaneous improvement of vocal fold function was observed in 25% of patients with long-term follow up¹⁴. In a study by Mehlum et al, 27% cases of vocal cord dysfunction were idiopathic⁵.

increase in traumatic cases causing VCP because of frequent blasts incidents in war against terror in recent years. During our study we encountered 13 cases (17.5%) of left vocal cord paralysis resulting from neck trauma. In this majority received bullet injury/blast injuries and belong to Armed Forces serving at North West Frontier border.

Traumatic vocal cord paralysis was leading etiology in a study conducted by Mehlum et al, 39%⁵. In some other studies traumatic etiology resulting in vocal cord paralysis was 18%⁴, 7%⁸ and 19%¹⁵.

Tuberculosis is quite common in developing countries and may present as mediastinal lymphadenopathy. Chronic pulmonary tuberculosis with pulmonary fibrosis particularly affecting the upper lobe of lung has been well documented as a cause of VCP by entrapment of RLN in the scar, traction neuropathy or compression by enlarged TB nodes¹⁶.

We found 6 cases of left vocal cord paralysis suffering from tuberculosis. Most of them presented with mediastinal lymphadenopathy and were diagnosed by raised ESR and typical Chest X-ray appearance. Later on, when investigated, their sputum was

also found to be positive for AFB (acid fast bacilli). There are many case reports in literature of VCP caused by TB lymphadenitis¹⁷. Ramadan found tuberculosis as etiology in 3% cases of VCP⁴, while in another study it was 16.6%⁶.

Left atrium enlargement: Ortner's Syndrome is quite rare clinical entity, first described in 1897. It explains left RLN palsy resulting from identifiable cardiovascular disease^{18,19}. During our study, we found 1 case of left VCP resulting from left atrium enlargement. These cases were suspected of having enlarged left atrium on Chest X-ray and later confirmed by cardiologist.

Thoracic aortic aneurysm may directly compress and cause injury of the left recurrent laryngeal nerve, manifesting as hoarseness of voice²⁰. We found 2 cases of dissecting aortic aneurysm presenting with left VCP. These cases initially presented in trauma centre of CMH Rawalpindi with complaints of chest pain and hoarseness and were diagnosed by surgical team as case of thoracic aortic aneurysm. In literature there have been cases who presented with left vocal cord dysfunction as a result of aortic aneurysm²¹.

CONCLUSION

Left vocal cord paralysis is a common entity in ENT practice with multiple etiologies. An extensive protocol for investigation of vocal fold paralysis is required. Protocol should include USG, CT scanning of skull base to diaphragm; because malignancy is still the most frequent cause of left vocal cord paralysis

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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