



A CLINICOETIOLOGICAL STUDY OF VOCAL CORD PARALYSIS : PROSPECTIVE STUDY

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ABSTRACT **INTRODUCTION :** Vocal cord paralysis(VCP) can affect any age group. Males are more affected than females. Left vocal cord is more often affected than right due to its lengthy and tortuous course. The cases where the cause cannot be established with full workup as mentioned in materials and methods are included in the Idiopathic group. The most common symptom is Hoarseness of voice. The purpose of this study is to determine incidence of various etiologies of VCP and their clinical presentations.

METHODS: In a Prospective study, 30 patients of vocal cord paralysis were examined by clinical ENT examination, tests such as examination of the larynx as mirror examination, endoscopy, Direct Laryngoscopy, esophagus, lung, Thyroid, mediastinum, heart and brain evaluated clinically and by diagnostic imaging to investigate the cause of vocal cord paralysis. The cases where the cause cannot be established with full work up are included in the Idiopathic group.

RESULTS: The main presenting complaint was hoarseness of voice in 86.66%. Left sided paralysis is about 83.33%, right side is 13.33% and bilateral is 3.33%. The main causes were Idiopathic 23.33%, Neoplastic 23.33% in our study.

CONCLUSION: The main causes for VCP are Idiopathic and Neoplasms. Full work up of the patient need to be done before labeling it as idiopathic and mainly malignancy needs to be ruled out.

KEYWORDS : Vocal cord paralysis(VCP), Etiology, Hoarseness of voice(HOV).

INTRODUCTION :

Vocal cord paralysis is a presentation of the underlying diseases which could be grouped as **Congenital** and **Acquired**. **Acquired** again grouped into **Central** causes, **Peripheral** causes. **Peripheral** causes are further divided as **Traumatic** as in accidental, intubation trauma¹, birth trauma, **Neoplasms** as in oesophageal carcinoma², bronchogenic carcinoma, laryngeal and hypopharyngeal carcinoma³, **Mechanical** as compression of left recurrent laryngeal nerve by enlarged left atrium of heart, **Infective and Inflammatory** as in Tuberculosis and radiation neuritis⁵ respectively, **Surgery** as in Thyroidectomy⁴, Neck, Cardiothoracic surgery, **Neuropathy**⁵ as in diabetes. Vocal cord paralysis cause airway obstruction, voice change and aspiration. The early recognition of this will prevent life threatening sequelae from hypoxia, anoxia, aspiration.

MATERIALS AND METHODS :

This is a Prospective study conducted over 30 patients at the Department of Otorhinolaryngology at Government General Hospital, Kurnool for a period from January 2015 to June 2016. Diagnosis is made by History, complete ENT examination including mirror examination and Neurological examination, Endoscopy, Direct laryngoscopy, Esophagoscopy, Routine investigations like hemogram, Renal function tests, liver function tests, blood sugar, Sputum for Acid fast bacilli, Chest X-ray, Barium swallow, 2D echo, CT Chest & Neck. **Inclusion criteria** is Patients of all age groups and both sexes with hoarseness of voice with or without breathing difficulty. **Exclusion criteria** include Patients with hoarseness of voice due to causes other than vocal cord paralysis like vocal cord nodules, cysts, papillomas etc.

OBSERVATIONS :

Out of all the patients attending ENT clinic, we studied 30 patients who fulfilled the inclusion criteria and diagnosed as having VCP. In this series the minimum age was 6 months old baby and maximum age was 77 years. Incidence was higher in 5th and 6th decade (56.6%). Number of male, female patients affected 19 (62.7%) and 11 (36.3%). 86.66% of patients presented with hoarseness of voice alone, 6.66% presented with dyspnoea, 10% presented with difficulty in swallowing, 13.33% presented with stridor, 16.66% presented with cough, 10% with swelling in neck, 13.33% with surgery on neck (Graph -1). Duration of symptoms less than 1 month account to 30%, 1-3 months account to 40%, >3 months account to 30%. Left sided vocal cord palsy is about 80% and that of right is 16.66%, and bilateral palsy is about 6.64%. The

Percentage of various position of paralysed cord are median 13.33%, paramedian 70%, intermediate 16.66%. Unilateral cord involvement is around 90% and bilateral involvement is around 10%. Regarding the site of lesion, peripheral causes account for 76.67% and 23.33% were idiopathic. In about 23.33% of cases, no apparent cause was found and labeled as Idiopathic. In the trauma group which is about 16.65%, intubation trauma accounts to 3.33%, birth trauma accounts to 6.66%, neck trauma accounts to 6.66%. Thyroid surgery accounts to 10%, Cardiothoracic surgery accounts to 3.33%. In the neoplastic group which is about 23.33%, carcinoma of upper third of esophagus accounts to 6.66%, carcinoma hypopharynx accounts to 9.99%, carcinoma larynx accounts to 3.33%, bronchogenic carcinoma accounts to 3.33%. Tuberculosis accounted for 16.66%, Diabetes accounts to 3.33% and Radiation accounts to 3.33% (Table-1).

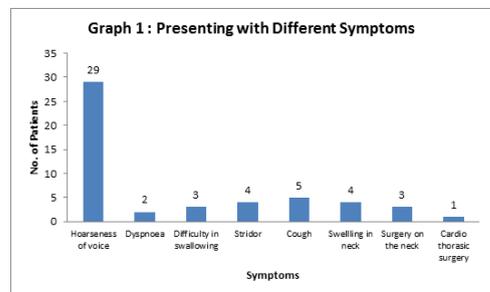
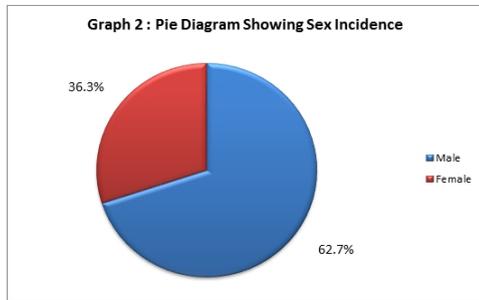


Table 1: Showing analysis of cases depending upon their aetiological factors

Aetiology of vocal cord paralysis	No. of Cases	Percentage
Surgery	4	13.32
a. After thyroid surgery	3	9.99
b. After cardiothoracic surgery	1	3.33
Trauma	5	16.65
a. Intubation trauma	1	3.33
b. Birth trauma	2	6.66
c. Neck trauma	2	6.66
Neoplastic conditions	7	23.33
a. Carcinoma upper 1/3rd oesophagus	2	6.66
b. Carcinoma hypopharynx	3	9.99
c. Carcinoma larynx	1	3.33
d. Bronchogenic carcinoma	1	3.33

Inflammation, toxic and infectious			
Tuberculosis		5	16.66
Diabetes	1	3.33	
Radiation	1	3.33	
Idiopathic	7	23.33	



DISCUSSION :

Statistical analysis of all our cases has been made with reference to several parameters and conclusions were drawn from them and compared with other series. Most of the patients in our study were in 5th and 6th decades, which is comparable to Cunning⁶, Francis W Parnell⁷, Jayanthi Pavithran et al⁸, Jaya gupta et al⁹ series. This may be due to higher incidence of malignancies and thyroid problems in this age group. Male to Female ratio in this study 1.72:1 is comparable with Jayanthi Pavithran et al, Jaya Gupta et al, Nemer Al Khtoum et al¹⁰ series. Most common symptom in this study is Hoarseness of voice which is comparable with many studies like Jaya gupta et al, Seyed javad et al¹¹, Shafkat Ahmed et al¹² series. In this study the ratio of left vocal cord palsy to right is 6.2:1 which is comparable with Titcher series¹³. The onset of symptoms were gradual in 70% and sudden in 30% which is comparable with Shafkat ahmad et al series. In many other series also left sided palsy is more common. This is due to longer and more tortuous course of recurrent laryngeal nerve on left side compared to right. The most common position of the paralyzed cord was Paramedian position 70%, then comes median position 13.33%, then intermediate position 16.66%. This is comparable with Hegans¹⁴ series where in paramedian position is 46.01%, median in 38.9%, intermediate in 4.4% and also with Goff¹⁵ series where paramedian is 93%, intermediate is 7%. In our study Unilateral vocal cord paralysis accounts to 90% and bilateral 10% which is comparable with Jaya gupta et al where Unilateral was 93.33% and Bilateral was 6.67% and also with Syed javad et al, where Unilateral accounts to 93.18% and Bilateral accounts to 6.82%. Regarding the etiology, in this study Idiopathic group is commonest accounting for 23.33%, which is consistent with Huppler series¹⁶ 29%. Trauma is next most common in this study which include Intubation trauma, Birth trauma, Accidental trauma which is consistent with Parnell series 33%. Thyroidectomy accounts for 9.99% in this study which is comparable with Maiser and Ogura series 8% and Tucker series 5%. The next common groups in this study were Infective and Inflammatory which include Tuberculosis account to 20% which is consistent with Cuning series 22%. Neoplasms account for 23.33% in this study which is consistent with Hegan series 23%. In this study Peripheral causes account for 76.67% and the rest is idiopathic 23.33%. No central cause found in this study. This may be due to central causes to cause vocal cord paralysis is rare and also may be due to small study group. In Nemer-Al Khtoum et al, Hsin-Chien chen¹⁷ et al, Syed Javad et al central causes account for 3.8%, 3.8%, 2% respectively.

Table 2 : Main causes of unilateral Vocal cord paralysis

Authors	Year	Surgery %	Neoplas m %	Idiopat hic %	Trauma %
Clerf (n = 293) ¹⁸	1953	23	38	12	-
Parnell and Brandenburg (n = 86)	1970	23	36	11	2.3
Titcher (n = 128)	1976	9.4	39	2.3	10.9
Shei et al (n = 283)	1979	22	39	11	14.3
Tucker (n = 210) ¹⁹	1980	42	22	14	-
Terris et al (n = 84)	1992	34.5	40.5	10.7	8.3
Benninger et al (n = 280)	1998	24	25	20	18
Ramadan et al (n=98)	1998	30	32	16	11
Yumoto et al (n = 422)	2002	33	19	22	
Hsin -Chien et al	2007	40	39.9	10.7	8
Present study(n=30)	2015	13.33	20	26.66	9.99

n = Numbers of patients



Fig 1 : Left side vocal cord abductor paralysis



Fig 2 : Bilateral vocal cord abductor paralysis

CONCLUSION

The most common cause of vocal cord palsy are idiopathic and neoplasms. High incidence in 5th and 6th decades. Males are more commonly affected than females. Before labelling it as idiopathic the full work up to rule out other known causes especially cancer need to be done.

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