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INCIDENCE AND ETIO-PATHOGENESIS OF VOCAL CORD PARALYSIS IN A TERTIARY CARE HOSPITAL

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ABSTRACT:

Background: Vocal cord paralysis is an important issue in laryngeal diseases and considered to be a sign of underlying disease. The etiology of this problem is changing and varied. **Aims and Objective:** This study was a retrospective analysis of vocal cord paralysis in patients with some underlying disease. **Material and Methods:** Detailed history of patients diagnosed and treated for vocal cord paralysis were studied, the data regarding age, sex, etiology, and duration of symptoms were collected.**Result:**38.89% patients were classified as idiopathic as no pathology is found, 18.06% had neoplastic cause, 16.67% had mechanical trauma / radiation hazard as cause, and rest other had iatrogenic, infection, accidental trauma, neurological and congenital factors as etiology. **Conclusion:** Magnetic Resonance Imaging is crucial in the work-up of idiopathic vocal cord paralysis. Vocal cord paralysis has got a variable etiology which varies with the involvement of the vocal cord. Idiopathic causes predominated in our series, followed by malignant causes.

Key words: Vocal cord paralysis, Etiology, Idiopathic, Malignant.

INTRODUCTION:

The vocal cords play a crucial role in phonation. The muscles that are responsible for vocal cord movement are mainly innervated by the recurrent laryngeal nerves. Vocal cord paralysis is a sign of an underlying disease, not a disease, which can be originated from a central cause (10%) or peripheral cause (90%) in its origin. (1, 2, 3) Rare involvement of vocal cord paralysis is seen in the diseases of the larynx itself. (4)

The etiology can be found in the thoracic cavity, neck, and mediastinum or in the cranial cavity along the course of corresponding recurrent or inferior laryngeal branch of Vagus nerve. Left vocal card is more involved because of longer intra-thoracic course of left recurrent laryngeal branch of Vagus nerve.

Clinically, laryngoscopy is a tool for assessing vocal cord function; in this a stroboscopic light will fall on the vocal cord, which can confirm the absence of movement on the affected side. Symptoms of VCP include: hoarseness, vocal fatigue, and loss of vocal pitch, shortness of breath, dysphagia, sore throat, cough, haemoptysis and aspiration. (4, 5) Hoarseness of voice is the main presenting symptom in the cases of vocal cord paralysis and its degree depends on the laterality of paralysed vocal cord. (4)

Trauma is the most common cause of vocal card paralysis followed by neoplastic lesions. (2) Vocal cord paralysis is an important feature in airway obstruction, change in voice and aspiration syndromes. (6) The early recognition and application of appropriate therapy will prevent life-threatening sequel from hypoxia, anoxia or entry of infection in the lower respiratory tract. The present study was done to determine the incidence and etiopathogenesis of vocal cord paralysis.

MATERIAL AND METHODS

The present study was conducted on 54 patients of vocal cord paralysis attending ENT department of Mahatma Gandhi Medical College and Hospital, Jaipur from July 2014 to June 2015. Evidence of cranial nerve pathology was looked for along with intensive diagnostic work-up, the only exception were those patients whose vocal cord paralysis symptoms followed surgical interventions, the traumatic group. The basic examination and diagnostic tests included were –

1. A complete history along with complete physical examination, examination of the larynx, examination by a neurologist.
2. Routine investigations like haemogram, urine examination, renal function tests, liver function tests, blood sugar fasting and serology for syphilis.
3. A chest X-ray.
4. A fibro-optic laryngoscopy.
5. A direct laryngoscopy with a passive mobility test.
6. A bronchoscopy.
7. A barium swallow, and if abnormal, an esophagoscopy.

Only when all these procedures had been performed without a diagnosis of an etiological agent, patient with vocal cord paralysis were classified as "idiopathic".

RESULTS

Patients were observed in the age range of 30 years to 70 years. Most of the patients 42 (77.78%) were presented in the 50-70 years of age. The youngest patient was of 31 years while the eldest was 68 years old. Male to female ratio was 2.18: l. Onset of symptoms was gradual in 59.26% of the cases and sudden in 41.74% of cases. 83.3 % patients presented with hoarseness of voice alone. Eight patients (14.81%) presented with difficulty in swallowing while 5 patients (9.26%) presented with neck swelling associated with hoarseness. One patient (1.9 %) presented with accidental trauma to neck with hoarseness of voice following accidental trauma. Other associated symptoms were cough with expectoration (51.9%), weight loss (29.63%), breathlessness (20.37 %), haemoptysis (18.51 %), dysphagia (11.11 %) and odynophagia (1.11%). Twenty seven patients had a significant past history.

Different types of addictions were noted in 72.22 % of patients. Tobacco smoking was the most common (46.3%) while 24.07% were addicted to snuff (nasal inhalation / oral route). Alcohol addiction was found only in 4 patients (7.4 %).

38.89% patients were classified as idiopathic as no pathology is found, 18.06% had neoplastic cause, 16.67% had mechanical trauma / radiation hazard as cause, and rest other had iatrogenic, infection, accidental trauma, neurological and congenital factors as etiology.

Table 1: Etiological factors causing vocal cord paralysis

S. No.	Etiological Factors	Number of patients	Percentage (%)
1.	Idiopathic	21	38.8
2.	Neoplastic	10	18.5
3.	Mechanical trauma / Radiation	9	16.6
4.	Surgical (Iatrogenic)	7	12.9
5.	Infection	4	7.4
6.	Accidental trauma	1	1.9
7.	Neurological	1	1.9
8.	Congenital	1	1.9
9.	Total	54	100

DISCUSSION

Rare involvement of vocal cord paralysis is seen in the diseases of the larynx itself. (4) Involvement of the Vagus or its recurrent laryngeal branch between the jugular foramen and its entrance into the larynx proper is the most common cause usually. (7, 8) First presentation of severe pathology in larynx is vocal cord paralysis. The radiologist must give appropriate diagnosis regarding mimics of vocal cord paralysis to avoid misdiagnosis, inappropriate additional evaluation and management so that delay in management can be avoided. Intracranial diseases such as tumor, abscess, bulbar paralysis or cerebro-vascular accidents (CVA) are also associated with vocal cord paralysis before the nerve leaves the skull.

The annual incidence reported of vocal cord paralysis varies from l7 to 29.3 as compared to present study where it is higher. (7, 8) This higher incidence is probably explained because of the data being derived from only urban patients of a tertiary care hospital not including patients of rural area.

Most of the patients 42 (77.78%) were presented in the 50-70 years of age. The youngest patient was of 31 years while the eldest was 68 years old. The late presentation among elderly population is due to decreased immunity, cancers and increased vascular events. This is in accordance with Daniel C and Srivastava S el al. (7, 9) Male to female ratio was 2.18: l. The male preponderance could be explained by the fact that in our country, the attendance of the males in out patient department of hospitals for the treatment of voice complaints is much more compared to females. Our results are matched with Nerurkar et al (10) (male: female = 2:1) from Mumbai, India.

Vocal cord paralysis was not related to any type of occupation. This has also been emphasized by Srivastava S et al. (9) The universal presenting symptom, that is, hoarseness of voice, 83.3 % patients presented with hoarseness of voice alone, was due to the vocal cord paralysis while other symptoms were related to the underlying disease process. Similar observations were made by Swift et al. (11)

Onset of symptoms was gradual in 59.26% of the cases and sudden in 41.74% of cases. This is almost in accordance with Swift et al (11) who found the gradual onset of symptom in 73.7% and sudden onset of symptom in 26.3% patients.

The etiological factors for vocal cord paralysis could be grouped as idiopathic, neoplastic, accidental trauma, radiation, surgical procedure, mechanical trauma, neurological and congenital causes. In the present study, commonest group was idiopathic (38.8%) which is consistent with those of Daniel C (31%). (7) Improved imaging, fiberoptic endoscopy can decrease the incidence of so called “idiopathic vocal cord paralysis”.

Neoplastic growth was the 2nd commonest cause of vocal cord paralysis (18.5%) as reported by Cunning, Goff, and Stell PM et al also. (3, 7, 12) Incidence of bronchogenic carcinoma (11.11%) as a cause of vocal cord paralysis falls within the range of incidence reported by Goff (6%) to Clerf (21.8%). (3, 8) Carcinoma esophagus (13) and surgical removal of thyroid malignancy (14) were accounted for 3.8% neoplastic cause of vocal cord paralysis, which was consistent with Clerf and Goff. (3, 8) In neoplastic cases, vocal cord paralysis may happen due to direct involvement of recurrent laryngeal nerve by the malignant disease itself or by the involvement of the Vagus nerve or its branch by secondaries in the lymph nodes of mediastinum, head and neck. In the present study, one case (1.9%) of vocal cord paralysis followed accidental injury to recurrent laryngeal nerve was found.

CONCLUSIONS

Vocal cord paralysis can be caused by the pathology in the course of the vagal and recurrent laryngeal nerves, between the medulla oblongata and the aortic arch. Since vocal cord paralysis may be the first presentation of pathology, the radiologist must be aware of the imaging characteristics and mimics of vocal cord paralysis, route of vagal nerves and recurrent laryngeal nerves, and various etiologies that can occur along their course.

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