

Laryngeal Palsy in a Post COVID -19 Infected case

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Abstract

Postviral vagal neuropathy is a condition of vagal nerve injury following prior viral illness. Laryngeal palsy after any viral infection is indeed rare.

Involvement of superior laryngeal nerve (SLN) and recurrent laryngeal nerve (RLN) leads to multiple presentations : motor, sensory or mixed motor sensory dysfunction.

Complete or partial recovery is reported in viral neuritis.

We report a post COVID- 19 infected case with left vocal cord dysfunction leading to phonatory defect. She was diagnosed with COVID – 19 via RT – PCR .After treatment and speech therapy her neurological condition improved.

Keyword - Unilateral vocal cord paralysis, COVID - 19 virus ,Postviral vagal neuropathy(PVNN)

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I. Introduction

Vocal cord paralysis can affect speaking, breathing and swallowing. The left vocal cord is affected twice as often as the right because of its longer and more extensive course¹. Diagnosis is based on laryngoscopy. Neurotropism is one common feature of COVs. Viral infection may cause nerve injury by direct infection and inflammation of the nerve or leading to a nonspecific inflammatory response that secondarily affects a nerve.

In both conditions viral involvement lowers the threshold of efferent and afferent arms both sensitizing the nerves to subthreshold stimuli.

Unilateral vocal cord² paralysis is more common. About one - third of unilateral paralysis are idiopathic. Viral neuritis account for most idiopathic cases.

Postviral vagal neuropathy³ is more common in women occurring most often in fifth and sixth decade of life. We are reporting a case of a young lady patient who had developed postviral laryngeal palsy after COVID-19.

OBJECTIVE

To discuss a case of Laryngeal Palsy in a Post COVID -19 Infection

II. Case Report

In the month of October 20 a 53 year old female patient presented in our E.N.T O.P.D. with a complaint of change in voice from about last 2 months. The patient had suffered from COVID - 19 infection in the month of August 20. The diagnosis was confirmed on basis of clinical features and RT - PCR test result.

The COVID-19 related symptoms had lasted for about 15 days and included runny nose, sore throat, dry cough, poor appetite, feeling of weakness, high rise of temperature, headache, bodyache followed by feeling of pressure in chest, breathlessness, loss of smell and taste, marked fatigue then falling oxygen saturation. She was hospitalised for oxygenation and medication. About 2 months after resolving of those Corona symptoms she developed present complaint of change in voice. This change in voice was persisting even during sleep. Her other complaints were throat clearing throat mucus, occasional coughing after laying down, feeling of something sticking in the throat. Her voice was hoarse and breathy. There was no dyspnoea or dysphagia.

The general Otolaryngological and neurological examinations were normal. Patient had no finding of laryngopharyngeal reflux and reflux symptoms score 12 was 4, making reflux diagnosis improbable. A Videolaryngostroboscopy was done ,showing sluggish left vocal cord movement, which was lying away from midline. Cords failed to meet in midline during adduction - thus a small phonatory gap persisted.

Patient was asked to do generous exercise (rapid walking, step climbing). After exercise voice became more degraded and laryngeal examination showed mild degree of paradoxical movement of cords^{4,5}. No psychological problem detected on clinical examination.

The laboratory testing did not find any other infectious diseases. A post viral laryngeal palsy diagnosis was made. Following suggestions were given alongwith anti inflammatory and methylcobalamin

- voice rest for about 10 to 14 days
- to stay well hydrated
- keep your throat moistened
- avoid whispering
- avoid exposure to smoke
- use anti inflammatory
- avoid fried foods, processed sugar, milk and milk products, ice water soda
- breathe moist air
- Of course she was not in the habit of smoking ,taking alcohol or caffeine
- She was advised to take vitamin C and to do inspiratory muscle strength training
- Behaviour modification was also advised

A significant improvement after a period of six months was observed



III. Discussion

The world is in the grip of devastating pandemic of Corona virus disease – 2019 (COVID– 19) originated in the Hubei province of China in late 2019 (December 2019). This contagious disease is caused by a novel coronavirus named SevereAcute Respiratory Syndrome Coronavirus – 2 (SARS – CoV – 2)⁶. Corona viruses are a large(120nm in diameter), diverse group of enveloped viruses containing positive sense single stranded^{7,8} RNA as their genetic material and are characterized by club - shaped protein spikes on their envelop giving them a Crown - like appearance (hence the term Coronavirus)

The principle mode of transmission is by droplets,aerosols or from infected surfaces.

It primarily affects the respiratory tract. The virus accesses host cells by attaching its spike - like surface projections to the angiotensin - converting enzyme - 2 (ACE – 2) which is most abundant in type II alveolar cells of the lungs. That is why the lungs are the organs most affected by COVID – 19.

In autopsies virus has been detected in cerebro spinal fluid. As brain has low levels of ACE-2 , probably virus first invades peripheral nerves. After a SARS- CoV-2 attaches to a targetcell, the virion releases RNA into the cell initiating replication of the virus which further disseminates to infect more cells. SARS - CoV - 2 produces several virulence factors that promote shedding of new virions from host cells and inhibit immune response.

COVID - 19 affects different people in different ways. The potential association is strengthened by neuroinvasive potential of COVID-19^{9,10} and vocal folds expression of ACE2¹¹ .Organ injury and death in COVID-19 is immune mediated rather than pathogen mediated.

IV. Conclusion

On the basis of above features, we came to the conclusion that somehow the neuroinvasive property of SARS-CoV-2 may lead to laryngeal palsy after COVID -19 infection. Speech therapy helps in recovering from voice change apart with other medical treatment and precautions. The observation reported here can be useful for Otorhinolaryngologists regarding current pandemic situation. However, further studies should be done regarding association between COVID -19 and laryngeal palsy.

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