



Unilateral Vocal Cord Palsy in a Post Covid-19 Infected Patient

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Received: September 07, 2021

Published: October 06, 2021

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Abstract

Most frequent neuro-otolaryngological findings associated with COVID-19 infection are chemoreceptor and sensory changes, but atypical motor paralysis can also be seen in some cases. Vocal cord paralysis can affect phonation, respiration and phases of swallowing. The left vocal cord is affected more commonly than the right because of its longer course. We present a case of 62 year male; admitted in Mayo Institute of Medical Sciences, Barabanki as a Covid positive patient, underwent treatment for the condition for about 19-20 days after which he was discharged as his Covid result came out to be negative; after 1 month of recovery patient started complaining of hoarseness of voice which was insidious in onset gradually progressive and resulted in voice fatigue for which laryngeal endoscopy was performed. On endoscopy we found Left sided false cord hypertrophy (Dysphonia Plica Ventricularis) and bowing and slight hyper abduction of left true cord was seen suggesting of Left cord paresis; on phonation the left cord did not meet the right cord in midline leaving a small phonatory gap. The right cord was normal in shape and movements; because the patient had no prior history of hemodynamic insufficiency and evidence of neurological disease. Laryngeal nerve palsies may be part of the neurologic complication of COVID-19. Thus in patients presenting with voice changes during or immediate post COVID 19 infection must suspect the possibility of neuronal damage caused by SARS-CoV-2.g.

Keywords: Vocal Cord Palsy; Covid -19; Unilateral Palsy; Voice; Recurrent Nerve

Introduction

The corona virus disease also known as COVID-19, the causative agent of which is severe acute respiratory syndrome corona virus 2 (SARS-CoV-2), has been declared as a pandemic by the World Health Organization (WHO). The last reported subtype of the corona virus family, is a ssRNA virus that is known to have droplet transmission [1]. It results into significant morbidity and its mor-

tality rate is estimated to be around 3.5% [2]. The primary symptoms of this disease are similar to mild to moderate flu like infection of upper respiratory tract. Along with cough and fever, sensory dysfunctions, such as anosmia and ageusia, are also observed [3]. In clinically severe cases apart from the above mentioned harmless symptoms, certain neurological diseases like encephalitis and encephalomyelitis have been reported [4]. The differentiating feature

of COVID 19 from other URTI is the nerve and neurological involvement through ACE2 receptors [5]. As studied and reported by many clinicians, different cranial and peripheral nerve dysfunction are common. Neuronal symptoms can be both central (like encephalitis and encephalomyelitis) and peripheral (like most frequently seen paralysis of eye muscles) [4]. Apart from the involvement of ACE 2 receptors, a direct neurotoxic effect and autoimmune vasculitis of nerves triggered by virus is also considered [6].

Case Report

Patient Mr. Ram Dayal (name changed) 62 year male resident of Barabanki, UP was admitted in Mayo Institute of Medical Sciences, Barabanki hospital with complaints of breathlessness and fever since 5 days. He was tested for Covid 19 (RTPCR) and was found Positive. On admission his oxygen saturation was 95% and thus he was admitted in Isolation ward and treated for mild to moderate category Covid infection with antibiotics, steroid and anticoagulant. His initial parameters were as follows TLC- 6700 cells/cu.m-m/S. Creatinine - 0.57 mg/dl/Hb. - 12.5 gm/dl/TRBC- 4.13millions/cu.mm/LDH- 376.8/D. Dimer- 1700.11/Urea- 36 mg/dl/S. ferritin- 249.95.

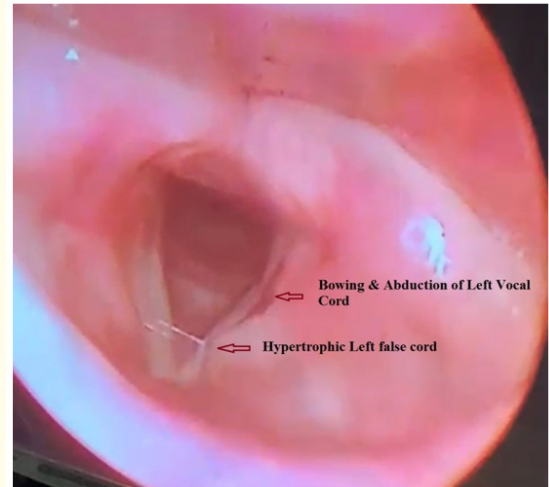
He remained under treatment in Isolation ward for about 19 days after which he tested negative for COVID-19 RTPCR after 21 days. At the time of discharge his D dimer was 250 and LDH- 275.

After 1 month of recovery from SARS Covid infection patient started complaining of hoarseness of voice which was insidious in onset gradually progressive and resulted in voice fatigue for which laryngeal endoscopy was performed.

On endoscopy- Base of tongue, Valeculae, epiglottis, arepiglottic folds, arytenoids, pyriform fossa appeared to be normal.

Left sided false cord hypertrophy (indicated by an arrow in picture 1) and bowing and slight hyper abduction of left true cord was seen suggesting of Left cord paresis; on phonation the left cord did not meet the right cord in midline leaving a small phonatory gap. The right cord was normal in shape and movements.

There was no cause found for vocal cord palsy on investigations like MRI and CT scan. There was no evidence of central cause of cord palsy like cerebral ischemia, cerebral or pulmonary malignancy or any other cervical or mediastinal mass that could produce



Picture 1

pressure symptoms of recurrent laryngeal nerve function. Other tests ruled out autoimmune pathology or other laboratory testing ruled out increased neurotropic viral infection. On neurological examination there was no sign and symptom suggestive of a neurological disease e.g. progressive bulbar palsy which could be the cause of vocal cord dysfunction. Similar to other vocal cord cases reported in literature, our patient had mild COVID infection and had no history of intubation. Milder disease suggested the cause of vocal cord dysfunction to be the vagal neuritis caused by neural invasion of SARS- CoV-2 virus.

Discussion

This report summarizes the case of a patient with Left vocal cord palsy after recovering from COVID-19 infection, which could be rare due to neuronal involvement of SARS-CoV-2.

The widely accepted cause of the neurological effects of the COVID-19 is the function of ACE-2; which is the functional receptor of SARS-CoV-2. It is this receptor which enables virus entry into the host. Type 2 alveolar cells in the lungs are the most common site of these receptors [5]. Studies describe that these virus enter CNS via olfactory nerves and also represent axonal transmission from neuron to neuron [7]. Besides this neurological symptoms associated with COVID-19 may also be the result of widespread cardi-

opulmonary insufficiency and metabolic insufficiency induced by COVID 19 infection or autoimmunity [8]. Because of central spread we often encounter two types of neurological complications of Covid virus; Central and peripheral.

Common peripheral complications include Guillain-Barré syndrome, facial nerve palsy, 6th nerve paralysis, optic neuritis, and phrenic nerve involvement. A case of bilateral vocal cord palsy associated with COVID 19 was described in a recent publication [9].

Amin and Kaufman in 2001 gave a term PVVN which is post viral vagal neuropathy refers to a group of symptoms occurring due to vagal neuropathy caused by URTI. PVVN comprises symptoms like excessive throat clearing, dysphonia, dysphagia, odynophagia, cough, laryngospasm and signs of LPR (laryngopharyngeal reflux) due to Vagus contributing both sensory and motor supply of pharynx and larynx [10].

Psychogenic dysphonia should not be overlooked due to the stressful pandemic of COVID 19, it should be suspected only after primary causes have been ruled out. Counselling and voice therapy remains the choice of treatment in female patients between 30 -50 years with psychogenic dysphonia [11].

There is a Neurocovid staging system given by Fotuhi., *et al.* (Stage I-III) [6].

In Stage I, the Covid virus affinity with ACE2 receptor is limited to nose and oral cavity leading to symptoms like anosmia and ageusia.

In Neurocovid Stage II where focal palsy occurs possibly due to vasculitis in the nerves and by the hyper activated immune system triggering the muscles.

In stage III, leads to cytokine storm resulting in symptoms, such as delirium, encephalopathy and/or seizures.

Conclusion

Most common neuro-otolaryngological association with COVID-19 infection are chemoreceptor and sensory changes, but evidence of atypical motor paralysis is also present. Hence we conclude that in patients with Covid 19 infection presenting with symptom of voice changes, the possibility of vocal cord paralysis due to neuronal damage caused by the SARS-CoV-2 should be considered. Further studies are needed to have a confirmatory correlation of the Vocal Cord palsy with Covid infection.

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Volume 3 Issue 11 November 2021

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