



FOOT DROP FOLLOWING COVID-19 INFECTION. A CASE REPORT AND ITS OUTCOME

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ABSTRACT **INTRODUCTION:** Corona virus disease-19 (COVID-19) is one among the worst pandemics faced by mankind and there are various neurological manifestations either direct or indirect effect of Corona virus. Here we report a case of foot drop secondary to entrapment peroneal injury in COVID-19 patient as a sequelae of prone positioning.

CASE REPORT: A 55-year-old gentleman was diagnosed with RT PCR positive COVID19 and was hospitalized for severe respiratory syndrome. HRCT thorax done showed CORADS score of 6 with severity index of 14/25. During this period, patient was on treatment according to ICMR guidelines and prone position for about 20 hours/day for 20 days for severe pneumonia. During follow up after 15 days of discharge, he had developed features of foot drop secondary to common peroneal nerve palsy which was later confirmed by electro diagnostic studies and nerve ultrasound. Patient was started on oral steroids and along with supportive measures. He is followed up for a period of 3 months and has noted 50% improvement in his symptoms.

CONCLUSION: While prone positioning should continue to be utilized in COVID-19 pneumonia as dictated by the current literature, precaution has to be taken with it. Changing patient positioning at shorter intervals and timely mobilization are necessary.

KEYWORDS : COVID-19, Pneumonia, Foot drop.

INTRODUCTION

Coronavirus disease (COVID-19) emerged in Wuhan, China in December 2019 and has quickly spread across the world, with the World Health Organization officially declaring it as a pandemic on March 11th, 2020^[1]. Over time as the disease evolved, our understanding of the pathogenesis, clinical spectrum and complications is yet far through. While the disease primarily affects the respiratory system, neurological complications affecting both the central and peripheral nervous systems have been reported^[2].

Peripheral neuropathy is one of the neurological complications of COVID 19. Peripheral nerve involvement in these patients can occur either due to post infectious inflammatory neuropathy or as a complication of treatment like nerve entrapment secondary to hematoma in the setting of anticoagulation treatment or position related neuropathy^[3]. It is also believed that the receptor for SARS COV-2 (angiotensin-converting enzyme 2) are also involved in this patho-mechanism^[3].

Few cases of COVID-19 patients presenting primarily with features of Guillain-Barre syndrome and Parsonage-Turner syndrome as COVID-19 have been recorded^[4]. Here we report a case of foot drop secondary to entrapment peroneal injury in COVID-19 patient.

CASE REPORT

A 55-year-old gentleman without any co-morbidities was hospitalized for severe respiratory syndrome preceded by non productive cough, exertional breathlessness and anosmia for one week. On examination pulse rate was 124 bpm (regular), BP was 134/82 mmHg.

He was in respiratory distress with respiratory rate of 36/min and oxygen saturation of 75% on room air. He had no crepitations/rhonchi or bronchial breath sounds. Other system examination was unremarkable.

Routine blood investigations showed Haemoglobin of 14.2g/dl, Total count of 13,800 cells/cumm and platelet count of 2,18,000lakhs/cumm. Inflammatory markers showed serum Ferritin of 725ng/ml (20-250 ng/ml), C - reactive protein of 6mg/dl (<0.8 mg/dl), and D-Dimer of 233 ng/ml (<250 ng/ml).

Chest radiograph showed bilateral non-homogenous opacities in lower lung fields. HRCT thorax done showed CORADS score of 6 with severity index of 14/25. (Figure:1). PCR testing for COVID was positive.

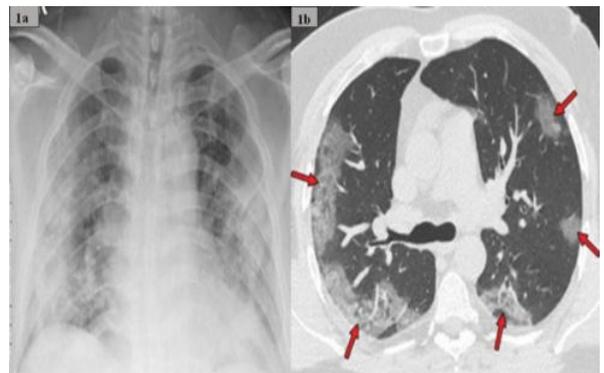


Figure 1: Antero posterior chest- radiograph shows multiple peripheral consolidation opacities in both lungs.(1a) Bilateral areas of ground-glass opacities(arrows) in a peripheral distribution.(1b)

Patient was diagnosed as a case of severe COVID-19 pneumonia and treated according to Indian Council of Medical Research (ICMR) guidelines with Inj.Dexamethasone 16 mg/day, Remdesivir (200mg intravenous stat followed by 100 mg for 4 days) and enoxaparin during a hospital course of 20 days. Patient was on continuous oxygen support and prone position (about 20 hours/day) for 20 days of hospital stay. Later he was discharged with tapering course of oral steroids for next 15 days with oral Apixaban 5mg a day, home oxygen support and prone ventilation.

Patient reviewed after fifteen days of discharge (35 days from onset of symptoms) with complaints of weakness of left ankle and toes of 3 days duration associated with paraesthesia's in the lateral aspect of left leg and dorsum of foot. On examination, patient had high stepping gait, there was no dorsiflexion of left ankle and toes (MRC grade 0/5) and there was reduced pin-prick and temperature sensation along lateral aspect of shin of tibia, dorsum of foot. All deep tendon reflexes were normal with mute plantar response bilaterally. Hence a clinical diagnosis of foot drop secondary to common peroneal nerve palsy was suspected.

High resolution ultrasonography of left common peroneal nerve done revealed thickening of the nerve and faciae at the fibular head, suggestive of focal neuritis. Motor nerve conduction study demonstrated decreased conduction velocity in the left peroneal nerve

across fibular head. Sensory nerve conduction study of superficial peroneal nerve was absent. (Figure 2)

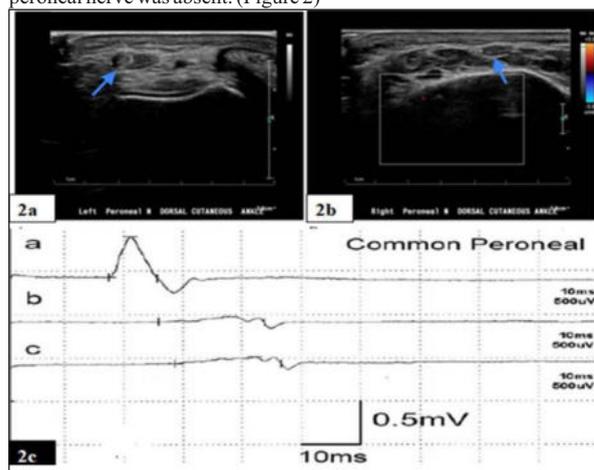


Figure 2:Ultrasound of left common peroneal nerve done revealed thickening of the nerve and faciae (arrows) at the fibular head.(2a,b) Decreased motor conduction in peroneal nerve across fibular head(2c)

Electromyography of left external hallucis longus, left external digitorum longus and left tibialis anterior showed increased insertional activity, fibrillation potential and positive sharp waves with no voluntary motor activity consistent with denervation. MRI of Lumbosacral Spine showed no evidence of nerve root compression.

Based on the above findings a diagnosis of Left Foot Drop due to entrapment of common peroneal nerve was established and the patient was started on oral Prednisolone 60 mg/day and Pregabalin 150mg/day, along with supportive measures like Ankle-foot orthosis and physiotherapy. He is followed up for a period of 3 months and has noted 50% improvement in his symptoms.

DISCUSSION

Here we present our experience with common peroneal neuropathy in a patient with COVID-19 following prone positioning for chest care. Although isolated common peroneal nerve injuries are less common in COVID-19, it could have been secondary to post infectious inflammatory neuropathy or direct neuropathic effect.

It is often noted that during proning patients are kept in swimmer's positioning for prolonged duration i.e.12-18 hours a day which are known to cause entrapment neuropathies^[5]. These predominantly affect the large myelinated fibres causing demyelination, sometimes secondary axonal damage^[5]. Another hypothesis of compression of blood vessels surrounding the peripheral nerve, lead to ischemia and dysfunction of the nerves have been postulated^[6]. In addition to this, there are few animal models demonstrating that the extraneural pressures as low as 20 to 30 mm Hg, seen in entrapment neuropathies disrupting intraneural venous circulation leading to breakdown in the blood nerve barrier and secondary nerve damage^[7]. Furthermore, the immune cell influx due to breakdown of blood brain barrier cause oedema leading to neuropathic pain^[8].

A similar case series of 5 patients with foot drop in COVID-19 was recently published which concluded that prone positioning was the primary culprit^[9]. Another interesting case study of 19 patients, who were diagnosed with acquired peripheral nerve injury in association with the use of prone positioning for COVID-19 related ARDS, by Malik G.R et al, showed that 94.7% had axonotmesis. They concluded that peripheral nerve injuries related to prone positioning are surprisingly common in COVID-19 patients^[4].

Management of foot drop can be supportive, medical, and surgical. However surgical decompression is the method of choice for acute compressions. Conservative approach is justified for peroneal nerve compressions as it shows poor regeneration when compared to other nerves following surgery^[10]. Medical management consists of steroids and other anti inflammatory drugs. Studies have shown that erythropoietin have shown to accelerate functional recovery after peripheral nerve injury^[11]. In addition, GABA agonists and Tricyclic antidepressants reduce the pain and parasthesia accompanying the foot

drop. Mechanical methods like splint usually correct flexible deformities, prevent development of contractures and new deformities, stabilize gait and improve pain as well as function^[12].

CONCLUSION

There is a sparse amount of data to refer to in this situation. Our aim in presenting this case report is to highlight the importance and precautions to be taken with patient in prone position as it has been associated with common peroneal neuropathy. While proning should continue to be utilized as dictated by the current literature, changing patient positioning at shorter intervals and timely mobilization are necessary.

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