Post Covid Neuropathy

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ABSTRACT

Introduction: Covid-19 infection caused by SARS-CoV- 2 causes a severe acute respiratory distress syndrome. Although the virus primarily affects the respiratory system, neurological complications are seen in many patients. Postinfectious neurological complications of SARS-CoV-2 are the result of immune mediated mechanisms and can be manifested as immune-mediated disease, including Guillain-Barré syndrome, neuropathy and other diseases of the central and peripheral nervous system.

Case report: We present the case of an elderly lady who presented with peripheral neuropathy after a severe covid infection and with other comorbidities. She was managed with oral steroids and Human Immunoglobulin which resulted in significant improvement.

Conclusion: Our existing knowledge about this coronavirus is limited, although many viruses have been known to cause neurological and cardiovascular symptoms, a thorough investigation and a proper case control study is essential to establish SARS-CoV-2 as a cause many such cases. The involvement of neurological system, although low compared to respiratory system involvement, the continued pandemic and appearance of new variants shows that neurological involvement can be expected in a large number of populations.

Keywords: Post-Covid Complication, Post-Covid Neuropathy, Neuropathy

INTRODUCTION

Although the key organ for SARS-CoV-2 is Respiratory System, some evidence shows neurotropism as one of the common features of this virus[1]. Disorders of the central and peripheral nervous system can be seen in post covid infected patients of any severity, while stroke, ataxia, seizures, and depressed level of consciousness are more common in severely affected patients[2]. Nervous system involvement can be during active infection mainly by direct effects of some viruses, while involvement of nervous system after the infection shows immune-mediated mechanisms in play. The spectrum of affected nervous system includes toxic encephalopathy, demyelinating disease, encephalitis, Guillain-Barré syndrome among other causes. Sars-CoV-2 can affect the nervous tissues infecting macrophages, microglia, or astrocytes[2,4] and cause nerve damage through directly infecting it. We present the case of an elderly lady who presented with peripheral neuropathy after a severe covid infection and with other comorbidities. She was managed with oral steroids and Human Immunoglobulin which resulted in significant improvement.

CASE REPORT

Patient is a 78-year-old female who presented with sudden onset weakness in bilateral lower limb. On examination she was conscious, oriented, following commands, moving all four limbs to commands, with a power of 2/5 in bilateral lower limbs and 5/5 on bilateral upper limbs. Plantars were mute. Pupils were bilaterally equally reacting to light. There was no sensory deprivation or two-point discrimination on examination. She had no neck rigidity, no fever or respiratory difficulty. She was maintaining a saturation level of >95 % on room air. She had Congestive Heart Disease for which cardiology opinion was taken.

On further discussion, the two on table suspicions were Guillain-Barré syndrome and Post Covid Neuropathy. We Ruled out Guillain-Barré syndrome as the disease was not progressing in ascending order to involve upper limbs, there was no respiratory involvement, which is commonly seen Guillain-Barré syndrome. A diagnosis of Post Covid Neuropathy was finally made. For management she was started on a pulse dose of steroids and Immunoglobulin which showed significant clinical improvement.

She tested positive for corona virus on 9 days after she was symptomatic by RTPCR test and was negative 9 days after she was detected positive and neurological symptoms started 45 to 50 days after Covid-19 infection. On follow-up examination she had no recurrence of symptoms and she gained full function of her limbs without any complication.

DISCUSSION

The transmission of SARS-Cov-2 occurs via contact with symptomatic or asymptomatic cases by close contact through droplets or by aerosol particles, contaminated surfaces, or fecal transmission[5]. The exact mechanism of covid infection leading to neuropathies is thought to be by retrograde neuronal transport across infected neuron, entry is thought to be the olfactory nerve and infection of vascular endothelial system[7,8]. Some papers suggest migration of white blood cells across the blood-brain barrier[6,8].

Many cases of SARS-CoV-2 remain asymptomatic which

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makes it difficult to track the actual pathology behind of neurological symptoms. A thorough examination and investigation may give a clue in asymptomatic patients which might be beneficial in management and reporting the case to get a deeper understanding about the virus[9].

In some patients who present with neuropathy, cerebrovascular disease, or acute disseminated encephalomyelitis, tracking the responsible virus is often difficult. This presenting condition however is the hosts response to the viral infection. Investigations such as a chest X ray or a CT scan of the chest may give a clue of past covid infection in some cases.

In cases of patients presenting with limb weakness investigation is often required along with proper neurological examination as it is important to distinguish between Guillain-Barré syndrome, Spinal cord compression or Post covid neuropathy[10]. Investigations such as CSF examination, neurophysiological studies, and spinal imaging are essential[9]. The patient presented in this study had no progressive weakness nor had sensory loss.

In patients on intensive care, it is crucial to rule out the manifestation of critical care illness which might present with neuropathy, myopathy and encephalitis. While there is no investigation to rule this out, critical care illness is presented after several weeks of intensive care[11]. The patient presented in this study had no such history.

The management of this manifestation of SARS-CoV-2 is similar to management of other immune mediated disease such as Guillain-Barré syndrome. Studies have shown cases to improve significantly from pulse steroid therapy along with Human Immunoglobulin therapy[8,13,14]. In some refractory cases plasma exchange therapy has shown to be effective[13].

CONCLUSION

Our existing knowledge about this coronavirus is limited, although many viruses have been known to cause neurological and cardiovascular symptoms[12], a thorough investigation and a proper case control study is essential to establish whether SARS-CoV-2 is a cause or a coincidental finding in many such cases. The involvement of neurological system, although low compared to respiratory system involvement, the continued pandemic and appearance of new variants shows that neurological involvement can be expected in a large number of populations.

REFERENCES

1. Li YC, Bai WZ, Hashikawa T. The neuroinvasive potential of SARS-CoV2 may play a role in the respiratory failure of COVID-19 patients. J Med Virol. 2020 Feb 27.
2. Beghi E, Feigin V, Caso V, Santalucia P, Logroscino G. COVID-19 Infection and Neurological Complications: Present Findings and Future Predictions. Neuroepidemiology. 2020;54:364-369.
3. Wu Y, Xu X, Chen Z, Duan J, Hashimoto K, Yang L, et al. Nervous system involvement after infection with COVID-19 and other coronaviruses. Brain Behav Immun. 2020; S0889-1591(20)30357-3
4. Al-Obaidi MMJ, Bahadoran A, Wang SM, Manikam R, Raju CS, Sekaran SD. Disruption of the blood brain barrier is vital property of neurotropic viral infection of the central nervous system. Acta Virol. 2018;62:16–27.
5. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect Dis 2020; 20: 533–34.
6. Neurological complications of middle east respiratory syndrome coronavirus: a report of two cases and review of the literature. Algahtani H, Subahi A, Shirah B. Case Rep Neurol Med. 2016;2016:3502683.
7. Neuropathogenesis and neurologic manifestations of the coronaviruses in the age of coronavirus disease 2019: a review. Zubair AS, McAlpine LS, Gardin T, Farhadian S, Kuruvilla DE, Spudich S. JAMA Neurol. 2020;77:1018–1027.
8. Bureau BL, Obeidat A, Dhariwal MS, Jha P. Peripheral Neuropathy as a Complication of SARS-Cov-2. Cureus. 2020;12:e11452.
9. Ellul MA, Benjamin L, Singh B, Lant S, Michael BD, Easton A, Kneen R, Defres S, Sejvar J, Solomon T. Neurological associations of COVID-19. Lancet Neurol. 2020;19:767-783.
10. Solomon T, Willison H. Infectious causes of acute flaccid paralysis. Curr Opin Infect Dis 2003; 16: 375–81.
11. Vanhorebeek I, Latronico N, Van den Berghe G. ICU-acquired weakness. Intensive Care Med 2020; 46: 637–53.
12. Solomon T, Dung NM, Vaughn DW, et al. Neurological manifestations of dengue infection. Lancet 2000; 355: 1053–59
13. Faqihi F, Alharthy A, Memish ZA, Kutsogiannis DJ, Brindley PG, Karakitsos D. Peripheral neuropathy in severe COVID-19 resolved with therapeutic plasma exchange. Clin Case Rep. 2020;8:3234–9.
14. Chen, X., Laurent, S., Onur, O.A. et al. A systematic review of neurological symptoms and complications of COVID-19. J Neurol 2021;268:392–402.

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