



Guillainbarré Syndrome not responding to Remdesivir, Enoxaparin and High dose methylprednisolone in Patient with Covid 19 and eclampsia in Pregnancy: A case report

Dibya Jyoti Sharma^{*1}, Aveenash Pawar¹, Phulen Sarma², Gaurav Muktesh³

¹Department of General Medicine, Silchar Medical College and Hospital (SMCH), Assam, India

²Department of Pharmacology, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India

³Department of Gastroenterology, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India

Article History:

Received on: 03 Nov 2020

Revised on: 12 Dec 2020

Accepted on: 16 Dec 2020

Keywords:

COVID-19,
Guillain-Barré syndrome,
eclampsia,
atypical manifestation

ABSTRACT

COVID-19 pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has protean manifestations. Nervous system involvement though uncommon in COVID-19 can present with debilitating manifestations like necrotising encephalopathy, myopathy, seizure, peripheral neuropathy and Guillain Barré syndrome. In this case report, we report a case of 27 years old woman who presented to us with post partum eclampsia and developed acute flaccid quadriplegia 5 days after COVID-19 infection which was manifested as cough, anosmia and ageusia without fever. Patient developed dyspnoea followed by type 2 respiratory failure 8 days after hospitalization for which she was put into mechanical ventilation. She was treated with high dose Methylprednisolone and standard medical therapy. IVIG or plasmapheresis could not be given due to non-availability. Patient expired in ICU after 18 days of hospital admission. SARS-COV-2 mainly infects the respiratory system of the body but it may have the neurotropic capacity and its ability to produce immune dysregulation can produce a cascade of inflammatory reactions in the nervous system. Guillain Barré syndrome is a heterogeneous disorder triggered by many viral infections and its development following COVID-19 infection can be attributed to the virus or immune response of the host against it. Possibility of COVID-19 infection triggering Guillain Barré syndrome cannot be ruled out. More studies regarding association of COVID-19 with the neurological disease may help in unraveling the neuro-invasion ability of the virus and to develop measures to prevent it.



*Corresponding Author

Name: Dibya Jyoti Sharma

Phone: +91-7637004455

Email: dibya.sharma@yahoo.com

ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11iSPL1.4291>

Production and Hosted by

IJRPS | www.ijrps.com

© 2020 | All rights reserved.

INTRODUCTION

The novel coronavirus SARS-CoV-2 induced pandemic of COVID-19 pneumonia which originated from Wuhan, China is a highly infective disease with a mean incubation period of 5.2 days and doubling time of case every 7.4 days (Q Li and X Guan et al, 2020). Fever (94%), cough (79%), dyspnoea (29%) were typical symptoms while hypertension (30%), diabetes (19%) and coronary artery disease (8%) were frequent comorbidities detected among patients with COVID-19 (Zhou et al., 2020). Not

infrequently extra pulmonary manifestations like diarrhea (5%), vomiting, abdominal pain, elevated liver enzymes, decreased albumin, myocarditis, cardiac arrest, acute coronary syndrome, heart failure, acute kidney injury has been observed (Zhou *et al.*, 2020; Johnson *et al.*, 2020). COVID-19 can involve both CNS and PNS leading to acute ischemic stroke, cerebral venous sinus thrombosis, decreased consciousness, encephalopathy as well as hypogeusia, hyposmia, neuralgia and peripheral neuropathy (Johnson *et al.*, 2020; Li *et al.*, 2020; Mao *et al.*, 2019). Association of COVID-19 infection with Guillain-Barré syndrome; an acute polyradiculoneuropathy has also been described in case reports (Toscano *et al.*, 2020). We report a case of Guillain-Barré syndrome in a post partum patient with a history of eclampsia infected with COVID-19.

CASE PRESENTATION

Our patient was a 27 year old female with a history of eclampsia who presented with abnormal behaviour on the 11th day of the postpartum period and was tested positive for COVID-19 on the same day. She had a history of cough, anosmia and ageusia but without a history of fever. She was hospitalized with these indications with a SpO₂ of 93% and was treated with Remdesivir injection, dexamethasone and Enoxaparin injection according to the national COVID protocol for moderate COVID. The patient developed acute flaccid paraparesis on the 5th day after hospital admission, which progressed to involve both upper limbs, two days after onset of paraparesis. She had no history of headache, changes in vision or speech, swallowing difficulty, bladder and bowel incontinence, facial deviation, saliva drooling from the angle of the mouth, trauma, sensory symptoms or features of any cranial nerve involvement.

Physical examination findings revealed increased blood pressure (160/90 mmHg) with tachypnoea and tachycardia. Pallor was present along with bilateral pedal edema, which was pitting in character. Her Glasgow Coma Scale was E4V4M2 and nervous system examination revealed areflexia without neck rigidity or Kerning's sign. Muscle power in both lower and both upper limbs were 2/5. Her sensory system examination was normal, with no upper sensory level and without bladder or bowel involvement. Notable laboratory findings included a white cell count of $9,800 \times 10^9$ /L, hemoglobin 9.6 gm/dl, MCV 91fl, serum potassium 3.3 mmol/l, serum sodium 136 mmol/l, serum creatinine 0.42 mg/dl, serum magnesium 1.60 mg/dl, serum TSH 2.34 mIU/L. She was treated with potassium sup-

plementation, magnesium sulphate injection, which corrected her electrolytes. Non-contrast CT scan of the brain revealed normal study, cervical spine and lumbosacral spine X-ray were normal, chest X ray was within normal limit. Cerebrospinal fluid (CSF) sugar was 70 mg/dl, the protein was high (200 mg/dl) and total cell count was normal (2 cells -100% mononuclear) with normal Adenosine deaminase (ADA) level (7.1 IU/L). The CSF finding was suggestive of albumino-cytological dissociation, which is characteristically detected in Guillain Barré Syndrome. Nerve conduction study was not performed as it was not available for an inpatient setting in our hospital.

The patient was treated with standard protocols for COVID-19 and eclampsia and the diagnosis of GBS was made on the basis of CSF study. Methylprednisolone 1gm per day was given for 5 days as plasmapheresis and IV immunoglobulin were not available. She developed type 2 respiratory failure after 7-8 days of hospital admission for which she was intubated and put into volume control mode ventilation. Her repeat RTPCR test for COVID-19 antigen on day 9 came out to be negative and she was shifted out of COVID intensive care unit (ICU) to general ICU. However, the patient developed ventilator associated pneumonia and sepsis for which she was treated with broad spectrum antibiotics and empirical antifungal. In spite of all available standard medical therapy, the patient could not recover from her ailment and she expired on 18th day of hospital admission due to progressive respiratory failure.

DISCUSSION

Guillain-Barré syndrome is the most common cause of acute flaccid paralysis at present which is characterized by areflexia, quadriparesis and albuminocytological dissociation in cerebrospinal fluid (high protein and normal cell count) with a disability rate of 20% and a mortality rate of 5% despite use of immunotherapy (Hughes *et al.*, 2007). Guillain-Barré syndrome is associated with progressive symmetric weakness of bilateral limbs over a period of 12 hrs to 28 days before reaching its nadir and often preceded by pulmonary infection or diarrhea 3 to 6 weeks prior to the onset of disease (James J. Sejvar and Katrin S. Kohl *et al.*, 2011). In two third of cases various infectious agents including bacteria and virus has been postulated as causative agent among which *Campylobacter jejuni* (30%), *Cytomegalovirus* (10%), *Epstein-Barr virus*, herpes virus and *Mycoplasma pneumoniae* were predominant organism detected. These infective agents

induce an autoimmune response due to molecular mimicry of their antigen with the axons and myelin of the peripheral nervous system of the human body (Yuki and Hartung, 2012). Autoimmune injury of the peripheral nerves is mediated by deposition of immunoglobulin and complement on the axons and surface of Schwann cells as well as infiltration of nerves by macrophage and T cell. Presence of specific anti ganglioside antibodies in the serum of patients with acute stage of GBS has been linked to the different pattern of clinical features in GBS ranging from only motor nerve involvement to Miller Fisher syndrome (Ang et al., 2004). GBS has shot into the limelight during COVID-19 pandemic as increasing cases of SARS-COV-2 with neurological manifestations has been reported and patients with severe COVID-19 disease were found to have neurological symptoms more frequently (Mao et al., 2019). However, only a few cases of GBS with COVID-19 has been established till date and the first symptoms appear 3 to 24 days after the viral illness similar to the disease interval in our case (Toscano et al., 2020; Rahimi, 2020). Most patients with GBS and COVID-19 infection were elderly (mean age 57.26 ± 15.82) with slight male preponderance though few cases were reported in children (age range 5-84 year) (Sejvar et al., 2011; Rahimi, 2020). However, we reported GBS in a young female patient who also had eclampsia simultaneously with COVID-19.

GBS is diagnosed based on clinical features of the acute symmetric weakness of lower limbs, flaccid quadriparesis, facial weakness or root type pain in limbs with cerebrospinal fluid testing showing elevated protein level and normal cell count (albumin cytological dissociation). CSF protein was normal or high with normal cell count in GBS patients associated with COVID-19 as in our case. Nerve conduction velocity (NCV) study showed acute demyelinating polyneuropathy (AIDP) in most cases, while axonal neuropathy was observed in a few cases in GBS patients associated with COVID-19 (Toscano et al., 2020; Rahimi, 2020). Magnetic resonance imaging (MRI) of spine shows caudal nerve root enhancement or normal reports in patients while antiganglioside antibodies were absent in most patients of GBS with COVID-19 (Toscano et al., 2020; Rahimi, 2020; Camdessanche et al., 2020). Polymerase chain reaction assay for SARS-COV-2 was negative in the majority of the patients (Toscano et al., 2020). Almost all patients were treated with intravenous immunoglobulin (IVIg) and a few patients COVID-19 associated GBS required ICU admission and mechanical ventilation. The outcome of GBS in COVID-19 was variable ranging from com-

plete recovery to permanent disability in the form of persistence of limb weakness and severe respiratory failure leading to death (Rahimi, 2020; Korem et al., 2020; Camdessanche et al., 2020). GBS in pregnancy is associated with autonomic dysfunction as well as terminal respiratory failure and is a potentially fatal condition. (Pacheco et al., 2016). However, the postpartum state is associated with an acute motor axonal form of GBS and has a variable but milder course showing complete or partial recovery (Gupta et al., 2017). Few reports of GBS is available associated with eclampsia although the incidence of posterior reversible encephalopathy syndrome (PRES) which commonly occurs with eclampsia and septicemia has been rarely encountered with GBS (Banakar et al., 2014). The fatal outcome in our case could be explained by the coexistence of multiple risk factors and complications with COVID-19. Clinicians should also consider alternative etiologies like vasculitis, beriberi, porphyria, toxic and critical illness neuropathy before making the diagnosis of GBS.

CONCLUSION

Further studies are needed to understand the effect of COVID-19 on the nervous system. Insight regarding the mechanism of GBS following infection with SARS-COV-2 will help improve the outcome of the patients. Prompt diagnosis and treatment of GBS in the initial stage can prevent potentially serious disability and reduce mortality in patients infected with COVID-19.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

Funding Support

The authors declare that they have no funding support for this study.

REFERENCES

- Ang, C. W., Jacobs, B. C., Laman, J. D. 2004. The Guillain-Barré syndrome: a true case of molecular mimicry. *Trends in Immunology*, 25(2):61-66.
- Banakar, B. F., Pujar, G. S., Bhargava, A., Khichar, S. 2014. Guillain-Barre syndrome with posterior reversible encephalopathy syndrome. *Journal of Neurosciences in Rural Practice*, 5(1):63-65.
- Camdessanche, J. P., Morel, J., Pozzetto, B., Paul, S., Tholance, Y., Botelho-Nevers, E. 2020. COVID-19 may induce Guillain-Barré syndrome. *Revue Neurologique (Paris)*, 176(6):516-518.
- Gupta, A., Patil, M., Khanna, M., Krishnan, R., Taly,

- A. B. 2017. Guillain–Barre Syndrome in Postpartum Period: Rehabilitation Issues and Outcome – Three Case Reports. *Journal of Neurosciences in Rural Practice*, 08(03):475–477.
- Hughes, R. A. C., Swan, A. V., Raphael, J. C., Annane, D., van Koningsveld, R., van Doorn, P. A. 2007. Immunotherapy for Guillain-Barre syndrome: a systematic review. *Brain*, 130(Pt 9):2245–2257.
- James J. Sejvar and Katrin S. Kohl et al. 2011. Guillain–Barré syndrome and Fisher syndrome: Case definitions and guidelines for collection, analysis, and presentation of immunization safety data. *Vaccine*, 29(3):599–612.
- Johnson, K. D., Harris, C., Cain, J. K., Hummer, C., Goyal, H., Perisetti, A. 2020. Pulmonary and Extra-Pulmonary Clinical Manifestations of COVID-19. *Front Med (Lausanne)*, 7:526.
- Korem, S., Gandhi, H., Dayag, D. B. 2020. Guillain-Barré syndrome associated with COVID-19 disease. *BMJ Case Reports*, 13(9):e237215–e237215.
- Li, Y., Li, M., Wang, M., et al. 2020. Acute cerebrovascular disease following COVID-19: a single center, retrospective, observational study. *Stroke Vasc Neurol*, 5(3):279–284.
- Mao, L., Jin, H., Wang, M., Hu, Y., Chen, S., He, Q., Chang, J., Hong, C., Zhou, Y., Wang, D., Miao, X., Li, Y., Hu, B. 2019. Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China. *Jama Neurol*, 77(6):683–690.
- Pacheco, L. D., Saad, A. F., Hankins, G. D. V., Chiosi, G., Saade, G. 2016. Guillain-Barré Syndrome in Pregnancy. *Obstetrics & Gynecology*, 128(5):1105–1110.
- Q Li and X Guan et al 2020. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *N Engl J Med*, 382(13):1199–1207.
- Rahimi, K. 2020. Correction to: Guillain-Barre syndrome during COVID-19 pandemic: an overview of the reports. *Neurol Sci*, 41(11):3375–3375.
- Sejvar, J. J., Baughman, A. L., Wise, M., Morgan, O. W. 2011. Population Incidence of Guillain-Barré Syndrome: A Systematic Review and Meta-Analysis. *Neuroepidemiology*, 36(2):123–133.
- Toscano, G., Palmerini, F., Ravaglia, S., Ruiz, L., Invernizzi, P., Cuzzoni, M. G., Franciotta, D., Baldanti, F., Daturi, R., Postorino, P., Cavallini, A., Micieli, G. 2020. Guillain–Barré Syndrome Associated with SARS-CoV-2. *New England Journal of Medicine*, 382(26):2574–2576.
- Yuki, N., Hartung, H.-P. 2012. Guillain–Barré Syndrome. *New England Journal of Medicine*, 366(24):2294–2304.
- Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y., Liu, Z., Xiang, J., Wang, Y., Song, B., Gu, X., Guan, L., Wei, Y., Li, H., Wu, X., Xu, J., Tu, S., Zhang, Y., Chen, H., Cao, B. 2020. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*, 395(10229):1054–1062.