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Neurological complications of COVID-19 and spontaneous abortion in a pregnant woman – A case report



Dear Editor,

We observed that, neurological complications of COVID-19 affecting both the central and peripheral nervous system and skeletal muscles are being increasingly reported [1]. However, to our knowledge, acute neurological complications of COVID-19 are not reported to date. The indirect involvement of the central nervous system (CNS) through viral-mediated immune response, cytokine storm, or autoimmune cross-reactivity between CNS components and viral particles is plausible in addition to the direct viral invasion to CNS [2]. Guillain-Barré syndrome has been reported in other post-viral infections including influenza, Zika, SARS-CoV, MERS-CoV, and SARS-CoV-2 [3]. It was also reported in a pregnant and postpartum woman with COVID-19 [4,5]. Herein, we report the clinical presentations, management and outcome of SARS-CoV-2 associated Guillain-Barré syndrome in a pregnant woman admitted at BYL Nair Charitable Hospital (NH), a dedicated COVID-19 hospital in Mumbai, India.

A 31-years-old G₂A₁ at her 12th gestational week with comorbidities of, anemia, rheumatoid arthritis, and old pulmonary tuberculosis was admitted at NH. She had a fever, dry cough, diarrhea, myalgia, and fatigue for 5 days. She developed a tingling and pricking sensation over both feet progressing to the knee followed by progressive weakness in her upper and lower limbs within 1 day of symptoms of COVID-19. Over the next four days, her neurological condition worsened, and eventually developed sensory loss up to thigh and elbows and had difficulty walking independently and standing without support.

On neurological examination, she had a bifacial weakness. Power was 4/5 in both upper limbs and 3/5 in both lower limbs across all joints. The deep tendon reflexes were absent in lower limbs and depressed in upper limbs on day-8 of neurological illness. Peripheral pulses were well felt. The single breath count was 16. There was no cerebellar or bladder or bowel involvement, or demarcated spinal cord sensory level.

The was no neck rigidity. The clinical picture was suggestive of subacute onset sensorimotor quadriparesis secondary to Guillain-Barré syndrome triggered by SARS-CoV-2 infection. The cerebrospinal fluid analysis did not show the characteristic albumin-cytological dissociation. Nerve conduction studies showed a demyelinating disease. MRI- brain, and spine were normal. A nerve-muscle biopsy of the superficial peroneal nerve did not show any active vasculitis. A diagnosis of acute inflammatory demyelinating polyneuropathy, a variant of Guillain-Barré syndrome was made. Her neuropathy was progressing and she developed a foot drop. Because of her previous history of abortion, she was investigated and was diagnosed with systemic lupus erythematosus (SLE) and antiphospholipid syndrome (APLA) (Tables S1–S4).

After the IVIG therapy, her single breath counts improved to 22. She responded to antibiotics, heparin, steroid, and hydroxychloroquine. Although her obstetric ultrasonography done at 12 weeks was normal, she aborted spontaneously within 10 days of developing weakness. After 25 days of hospital stay, she took discharge against medical advice. At the time of discharge, she had a mild distal sensory loss in both upper and lower limbs There was mild proximal and distal muscle weakness and she was able to walk independently. The pertinent events in the patient's illness are shown in Fig. 1.

We report a rare case of Guillain-Barré syndrome in a pregnant woman with COVID-19 who suffered from spontaneous abortion in the second trimester. To the best of ours knowledge, this is the first reported case of Guillain-Barré syndrome in a confirmed COVID-19 pregnant woman with spontaneous abortion. Out of the total 1572 pregnant and post-partum women with COVID-19, only one patient developed Guillain-Barré syndrome. It is rarely observed in pregnant women and has a very low incidence during pregnancy. A pre-existing comorbid autoimmune disorder such as SLE and APLA, in this case, might be responsible for triggering an acute neurological complication of Guillain-Barré syndrome. However, the mechanism of SARS-CoV-2 triggering Guillain-Barré syndrome is still debated. The immune cross-reaction between epitopes and host antigens could be one of the pos-

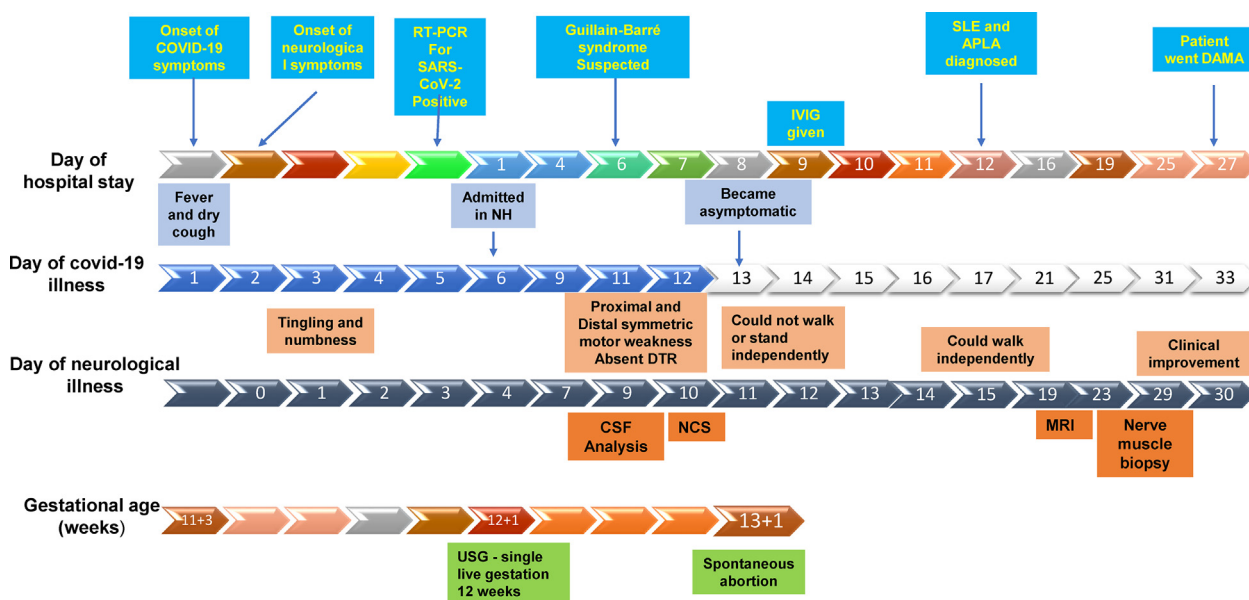


Fig. 1. Timeline of pertinent events in the course of the patient's illness and hospitalization. Top row: specific date of events. Middle rows: day of COVID-19 illness and neurological illness. Bottom row: age of gestation and pregnancy outcome. RT-PCR, Reverse transcriptase-polymerase chain reaction; IV IG, Intravenous immunoglobulin; SLE, Systemic lupus erythematosus; APLA, Antiphospholipid syndrome; DAMA, Discharge against medical advice; NH, Nair hospital; DTR, Deep tendon reflexes; CSF, Cerebrospinal fluid; NCS, Nerve conduction studies; MRI, Magnetic resonance imaging; USG, Ultrasonography.

sible explanations [6]. The interval between the diagnosis of COVID-19 and the onset of Guillain-Barré syndrome symptoms in the present case was one day which was very early than the other reports in the literature [5,6]. Uncini and colleagues [6] in their systematic review reported a range from 3 to 28 days. We started the IV IG within 10 days from symptom onset. The regimen of 2 g/kg divided over 5 days was given. The patient showed significant improvement and was ambulatory at discharge.

To conclude, the presence of autoimmune conditions in pregnancy could be triggering Guillain-Barré syndrome and manifesting early as seen in our case. Based on our results, we recommend that BOH cases and those with a history of confirmed or suspected autoimmune disease with COVID-19 may be investigated specifically for autoimmune neurological diseases.

Ethics approval and consent to participate

The Ethics Committees of TNMC (No. ECARP/2020/63 dated 27.05.2020) and ICMR-NIRRH (IEC no. D/ICEP/Sci-53/55/2020 dated 04.06.2020) approved the study. A waiver of consent was granted by the IECs as the data was collected from the medical case records of the pregnant women with COVID-19.

Consent for publication

Written informed consent was obtained from the patient for publication of the Case. A copy of the written consent is available for review by the Editor of this journal.

Availability of data and materials

The data that supports the findings of this study are available in the [supplementary material](#) of this article.

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Author's contributions

NM and RG had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: NM, RG.

Acquisition of data: SS, PM, RC, NM.

Analysis, or interpretation of data: All authors.

Drafting of the manuscript: NM, RG, SS, RC.

Critical revision of the manuscript for important intellectual content: NM, RG, SM.

Statistical analysis: NM, SS.

Administrative and technical or material support: NM, RG, SM.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Trial registration

PregCovid study is registered with Clinical Trial Registry of India (Registration no: CTRI/2020/05/025423).

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ejogrb.2021.06.010>.

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