

Atypical Guillain-Barré syndrome post SARS-CoV-2 (coronavirus-2) infection

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Objective

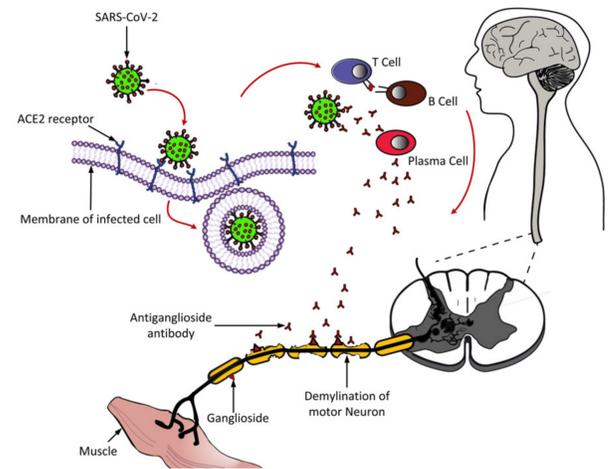
To report a case of atypical Guillain-Barré Syndrome (GBS) following SARS-CoV-2 infection.



Literature review

The association of SARS-CoV-2 with the risk of GBS remains uncertain. GBS is a rare autoimmune disorder characterised by an inflammatory demyelinating and axonal neuropathy resulting in a rapidly progressive, ascending paralysis with diminished or absent reflexes (1,2). The disease is preceded by an infection or other molecular mimicry, a process where antibodies formed against the pathogens bind to gangliosides on the surface membrane of peripheral motor and sensory neurons; this causes an immune-mediated damage to the myelin sheath and/or axons (1,3). One proposed potential mechanism for SARS-CoV-2 causing nerve damage is by inducing T cell and B cell activation resulting in the production of SARS-CoV-2 antibodies (1). These antibodies then lead to molecular mimicry resulting in an autoimmune mediated destruction of myelin sheath and/or axons (Figure 1) (1,3). In patients who developed GBS post SARS-CoV-2 infection the symptoms reportedly progress more rapidly and severely than a typical presentation for GBS, and 64% report sensorimotor features including facial palsy (4,5).

Figure 1. A proposed representation of the likely pathophysiology of SARS-CoV-2 associated GBS 1



Clinical Features

Presentation

- A 40-year-old Caucasian male presented with fast progression of bilateral hamstring tightness and pain and sensory alterations of hands and feet, followed by paraesthesia of mouth and throat leading to dysphagia.

Day 0

- Two weeks prior to the onset of neurological symptoms, patient had experienced an asymptomatic SARS-CoV-2 infection
- No past medical history was reported, and three Pfizer (COMIRNATY) COVID-19 vaccines had been received.

Day 1

Diagnosis

- Elevated protein and leukocyte count and negative SARS-CoV-2 viral serology in CSF
- Negative autoimmune and myositis screens
- Loss of bladder and bowel control

Management

- ICU admission
- Spirometry initially 110% and declined to 70-80% over 4 days
- IVIg administration for a total of five days
- Methylprednisolone 1g IV for three days
- Slow clinical improvement followed treatment
- Pharmacist interventions (See below)

Day 2

Day 23

Progress

- Transferred from High Dependency Unit to a general medical ward

Outcome

- Patient transitioned to an acute rehabilitation unit and was discharge independent with all activities of daily living on Day 58.

Day 28



Pharmacist Interventions

Cardiovascular complications

- Tachycardia and Hypertension due to autonomic dysfunction
- Clonidine and metoprolol dosing advice and side effect monitoring

Pain management

- Neuropathic pain
- Ketamine infusion, PCA oxycodone, pregabalin, duloxetine and lignocaine infusion dosing advice
- QT prolongation drug interactions monitoring
- Liaison with Acute Pain Services

Gastroenterology complications

- Dysphagia and gastroparesis
- Nasogastric feeds, prokinetics and aperients dosing advice and monitoring
- QT prolongation drug interactions monitoring

Psychological complications

- Insomnia and mental health deterioration
- Melatonin, diazepam, Temazepam PRN dosing advice and monitoring
- Liaison with Psychiatrist



Conclusion

This case highlights the possible occurrence of GBS in patients following SARS-CoV-2. The association between SARS-CoV-2 infection causing GBS must be further studied to establish the immune-mediated mechanism. Pharmacists' understanding of this presentation will impact clinical decision making and contributions for patients affected by SARS-CoV-2.

References

- Kajumbar MM, et.al. COVID 19-Associated Guillain-Barré Syndrome: Atypical Para-infectious Profile, Symptom Overlap, an Increased Risk of Severe Neurological Complications. SN Comprehensive Clinical Medicine. 2020;2:2702-2714.
- Caamano DSJ & Beato RA. Facial diplegia, a possible atypical variant of Guillain-Barré Syndrome as a rare neurological complication of SARS-CoV-2. Case Reports/Journal of Clinical Neuroscience. 2020;230-232.
- Caress JB, et.al. COVID-19-associated Guillain-Barré syndrome: The early pandemic experience. Muscle & Nerve. 2020;62:485-491.
- Toscano G, et.al. Guillain-Barré Syndrome Associated with SARS-CoV-2. The new England Journal of Medicine. 2020; 382(26):2574-2576
- Luijten LWG, et.al. Guillain-Barré syndrome after SARS-CoV-2 infection in an international prospective cohort study. Brain. 2021;144:3392-3404.