Key Summary of Published Article

COVID-19 Pandemic
Ganglioside Antibody Positivity

How has the COVID-19 pandemic affected positivity rates of antibodies associated with Guillain-Barré syndrome (GBS)?

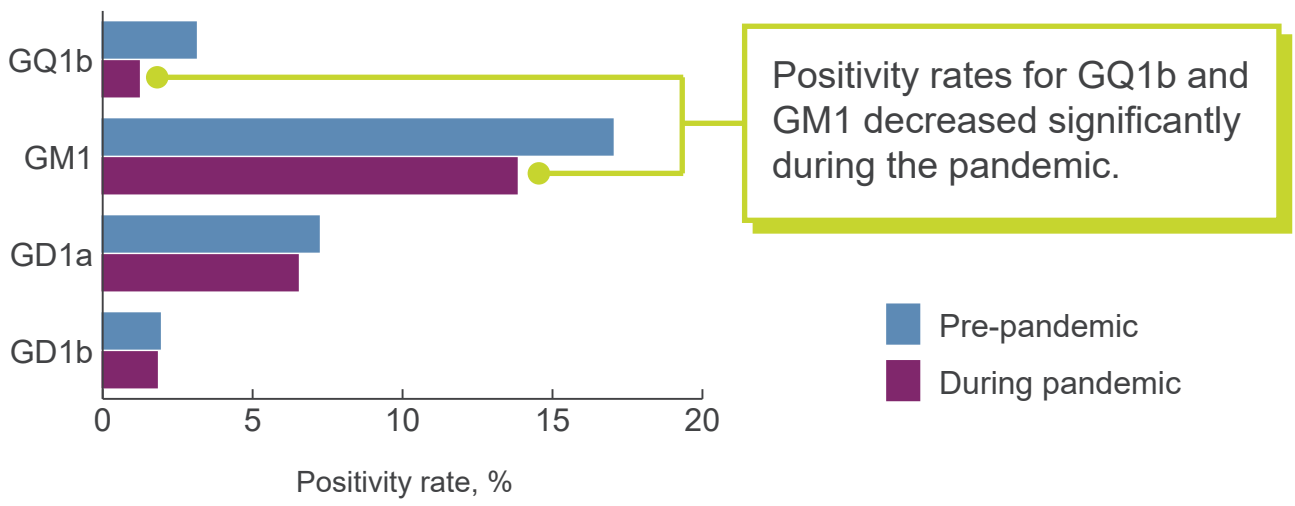
Background

Several studies have investigated GBS as a potential complication of COVID-19, with conflicting results. These discrepancies could stem from the varying effects that COVID-19 has on different forms of GBS, which are associated with different ganglioside antibodies (such as GQ1b and GM1).

Population and results

- >100,000 patients tested for GBS-associated ganglioside antibodies at Quest Diagnostics from January 2016 through March 2021.

Ganglioside antibody positivity rates[1]



Positivity rates declined or remained stable for the GBS-associated antibodies assessed, suggesting that the COVID-19 pandemic was not associated with increasing rates of GBS. Further study is needed to assess whether declines in GBS-associated antibodies reflect the effects of COVID-19 mitigation measures.

[1] Racke MK, Niles JK, Lorenz RA, et al. Changes in ganglioside antibody positivity rates during the COVID-19 pandemic. *J Neuroimmunol*. 367:577877. doi:10.1016/j.jneuroim.2022.577877

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Key Summary of Published Article

Chronic Hepatitis B
Ganglioside Antibody Positivity

Article title: Changes in Ganglioside Antibody Positivity Rates During the COVID-19 Pandemic

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Background

- Guillain-Barré syndrome (GBS) is an autoimmune neurologic disorder; different forms are associated with antibodies against specific gangliosides.[1]
- Infectious diseases can lead to the development of GBS, with some evidence suggesting an association between SARS-CoV-2 and GBS; however, reports are conflicting.[2,3]
- The COVID-19 pandemic could have varying effects on the different forms of GBS.
- **Objective:** This study examined trends in positivity rates for GBS-associated ganglioside antibodies during the COVID-19 pandemic versus the pre-pandemic period.

Methods

- Quarterly test volumes and positivity rates were examined for all tests performed for GBS-associated ganglioside antibodies (GQ1b, GM1, GD1a, and GD1b) at Quest Diagnostics from January 2016 through March 2021.
  - Pre-pandemic period: January 1, 2016 through March 31, 2020
  - COVID-19 pandemic period: April 1, 2020 through March 31, 2021
- Testing for GBS-associated ganglioside antibodies was conducted with covalent enzyme-linked immunoassays (ELISAs).
- Differences between groups were assessed by chi-square tests.

Results

- The study included GQ1b test results from 25,006 patients, GM1 results from 45,048, GD1a results from 19,711, and GD1b results from 18,959.
- Quarterly testing levels for GBS-associated ganglioside antibodies initially decreased during the pandemic, likely a consequence of the shutdown, then increased to pre-pandemic levels or above.
- Positivity rates declined during the pandemic for some GBS-associated antibodies but not for others:
  - GQ1b: declined 61% (3.1% vs 1.2%, $P<0.001$)
  - GM1: declined 19% (17.0% vs 13.8%, $P<0.01$), though a declining trend was already observed during the pre-pandemic period
  - GD1a and GD1b: mostly unchanged (GD1a: 7.2% vs 6.5%, $P=0.109$; GD1b: 1.9% vs 1.8%, $P=0.559$)

Conclusions

- For the GBS-associated antibodies assessed, positivity rates declined (GQ1b and GM1) or remained stable (GD1a and GD1b), suggesting that the COVID-19 pandemic was not associated with increasing rates.
- Mitigation strategies employed during the COVID-19 pandemic may have played a role in the declining trends of certain forms of GBS, and further study is warranted.

References

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3. Keddie S, Pakpoor J, Mousele C, et al. *Brain*. 2021;144(2):682-693. doi:10.1093/brain/awaa433