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Clinical Letter

# Guillain-Barré Syndrome After COVID-19 Vaccination in an Adolescent

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Guillain-Barré syndrome (GBS) has been associated with SARS-CoV-2 infection in adults and children,[1] and it has been noted as an adverse effect with the Janssen COVID-19 vaccine in adults.[2] There have been no cases reported of children developing GBS after COVID-19 vaccination, to our knowledge.

We describe a child who developed GBS within one month of the administration of the second dose of the Pfizer-BioNTech COVID-19 vaccine. Our patient is a 14-year-old male who received the second dose of the Pfizer-BioNTech COVID-19 vaccine on June 11, 2021. He had previously never been diagnosed with COVID-19. On July 3, he experienced left lower extremity swelling up to the knee after a probable bee sting to the bottom of his left second toe, which resolved within two weeks without treatment. On July 11, he reported subjective facial weakness and subjective tongue swelling, for which he received oral prednisone at an urgent care facility. Owing to increasing facial weakness, he was evaluated in the emergency department on July 14, and he underwent diagnostic testing for common causes of facial palsy. No other weakness was reported on examination at that time. He was admitted on July 19 for progressive facial and limb weakness with areflexia. COVID-19 antigen testing was negative upon admission. On examination, he had significant difficulty ambulating, bilateral facial weakness worse on the left, and 4+/5 strength throughout the left hemibody but preserved strength on the right side. Over the next few days, he became quadriparetic and was unable to ambulate independently. Breathing was never impaired.

This child's diagnosis of GBS was confirmed through clinical presentation; cerebrospinal fluid showing 4 white blood cells and 165 mg/dL protein, indicating cytoalbuminocytologic dissociation; and electrodiagnostic studies demonstrating a severe, generalized polyradiculoneuropathy, with demyelinating features indicating the acute inflammatory demyelinating polyradiculoneuropathy variant of GBS. Although this patient did not have any sensory losses, both acute inflammatory demyelinating polyradiculoneuropathy and the acute motor axonal neuropathy variants can cause pure motor symptoms.[3] Additional cerebrospinal fluid and serum testing excluded alternative etiologies, including negative Lyme antibodies, Lyme polymerase chain reaction, and ganglioside antibodies.

Our patient was treated with 2 g/kg IVIg over 3 days. Beginning on the third day of his IVIg course, he demonstrated marked improvement in his facial and limb weakness. Before discharge, he was able to ambulate with assistance and went home with outpatient physical therapy seven days after admission. At his follow-up appointment in mid-August, he reported full resolution

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Patient consent: Patient and parents have provided informed consent for the publication of the case.

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of his neurologic symptoms, and no neurologic abnormalities were noted on physical examination.

We are unaware of other pediatric cases of GBS reported in association with a COVID-19 vaccination. Although our patient experienced a probable bee sting in the time after his vaccination, we find it unlikely that this was a direct cause of our patient's GBS given the scarcity of case reports on this association[4] and the quick resolution of localized symptoms. Following the 1976 National Influenza Immunization Program, which was associated with an increased risk of GBS up to 10 weeks after administration, there has been intense scrutiny of subsequent influenza vaccines. Results from analyses of subsequent vaccines have been uneven but are associated with at least a slight increased risk of GBS after many vaccinations in both children[5] and adults,[6] suggesting an etiological linkage. COVID-19 vaccines could trigger GBS via molecular mimicry or via a nonspecific immune response to the vaccine. The incidence of GBS in children is 0.34 to 1.34 cases per 100,000 person,[7] so it is also possible that this case occurred coincidentally with the vaccine.

The onset of GBS within six weeks of vaccination suggests a possible causative association, but large-scale epidemiologic studies are required to determine if COVID-19 vaccination increases the risk of GBS in this population.

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# Update

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Corrigendum

# "Guillain-Barré Syndrome After COVID-19 Vaccination in an Adolescent" [Pediatric Neurology, Volume 126, January 2022, Pages 9-10]

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The authors regret that a significant error regarding this article's author order. The current author order is: Emily Malamud, Scott Otallah, James Caress, Daniel Lapid. The corrected order should be: Emily Malamud, James Caress, Daniel Lapid, Scott Otallah. The first author would like to apologize for any incovenience caused.

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