Two case and literature reviews with typical GBS and rare GBS variants associated with Covid-19

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ABSTRACT

Although respiratory and gastrointestinal manifestations of SARS-CoV-2 are well defined, the spectrum of neurologic involvements is less defined. Patients with the coexistence of GBS disease and active COVID-19 illness have been reported widely in adults, but this number is deficient in children. In this study, we aimed to present a literature search study on the etiological correlation of SARS-CoV-2 and GBS by presenting two pediatric patients with acute monophasic Guillain-Barré syndrome (GBS) during active COVID-19 infection.

Case-1

Our first case was a previously healthy 17-year-old girl who presented with complaints of weakness in walking, pain in the legs, and subfebrile fever. There was no history of gastroenteritis or vaccination before the admission. The nasopharyngeal SARS-CoV-2 PCR test was positive. On physical examination, her vital signs were stable. She couldn't walk and sit. In her neurological examination, consciousness was clear, and awareness was full. Facial weakness and speech-swallowing difficulties were present. There was also weakness in the neck muscles. There were no signs of upper motor neuron disorder or meningeal irritation. Sensory examination was regular.. Based on the history and clinical examination findings, GBS was considered in the preliminary diagnosis. Other diagnoses were excluded with detailed examinations. (see **Figure** 1)

Case-2

Our second case, a previously healthy 15-year-old male patient, was admitted with complaints of fever that had started for two days, cough, difficulty walking, and pain in the legs. The nasopharyngeal SARS-CoV-2 PCR test was positive. There were no respiratory symptoms of Covid 19 disease. In his neurological examination, consciousness was clear, and awareness was full. There was no difficulty in swallowing. Sensory examination was normal. Muscle strength was affected, and bilateral deep tendon reflexes could not be obtained. There were no signs of upper motor neuron disorder or meningeal irritation. Considering GBS with the history and clinical examination findings, IVIG treatment was administered for two days.MThe patient was considered as a GBS subtype AMAN with all the results. The prognosis was good. Before discharge, the patient started ambulation. Pediatric neurology follow-ups are carried out with the physical therapy program.

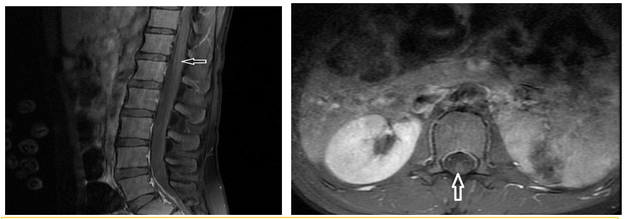

Figure 1: Post-contrast pial brightness (left) in T1 sagittal section at conus medullaris level in spinal MRI, pial contrast in conus medullaris/cauda equina in axial T1 section (right)

DİSCUSSİON

This study presents 2 cases of GBS developing during active COVID-19 infection, one AMAN and the other AMAN/FSB variant with an atypical course. As of April 2022, approximately 15 028 000 cases of COVID-19 have been reported in Turkey. In the most recent literature review, it has been reported that there is a relationship between GBS and covid 19 infection in 35 pediatric cases. The nasopharyngeal SARS-CoV-2 PCR test was positive in 17, and neg was detected in 5. SARS-CoV-2 serological study was positive in 12 patients. In the pediatric GBS cases associated with COVID 19 reported up to May 2022, the most common variant was AIDP. Along with our cases, AMAN was the second frequency (Table). The most common presentation was increasing progressive weakness. The time from onset of COVID-19 symptoms to clinical signs of GBS ranged from 1 to 6 weeks. Our first case had a fever, lymphopenia, positive SARS-CoV-2 test, and muscle weakness. Thus, there was a temporal relationship in a para-infectious profile, indicating a possible association between GBS and SARS-CoV-2 infection. Our other case had clinical features similar to the above case without lymphopenia. In this respect, it is thought-provoking for a possible para-infectious immune mechanism. Based on our literature review, post-COVID-19 GBS and classic GBS appear similar in clinical presentation and outcome. However, unlike most case reports as GBS subtype, our cases were AMAN variants.

Presence of GBS symptoms in patients while active SARS-CoV-2 infection persists, with high albumin-cytological dissociation rates in most reports suggesting a direct infectious condition and a postinfectious inflammatory process.

Gender	Age (year)	Serology test of SARS-CoV-2	GBS variant	Treatment
Male 23 Female 14	2-18	Positive 19 Negative 5 Not done 13	AMAN 7 AIDP 9 MFS 3 FSB 1 Inexcitable 1 Not mentioned 16	Ivıg 23 Steroid 4 Plasma exchange 2 Not mentioned 13

Table : COVID 19-related GBS cases reported with our cases until May 2022

RESULT

Analyzing antibodies against structural proteins and glycolipids in peripheral nerves in the etiology of GBS associated with COVID-19 will improve understanding of the immunological cascade. On the other hand, detailed case definitions and epidemiological analyzes are needed to determine the GBS subtype with electrophysiological studies.

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