Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Correspondence

Expanding the Spectrum of Acute Cerebellitis due to SARS-Cov-2

Sharma et al., report two cases of fulminant cerebellitis in children with coronavirus disease 2019 (COVID-19).[1] Here we describe another child with an acute cerebellitis during severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection but with a substantially different presentation, which may broaden its clinical spectrum.

This five-year-old boy complained of an acute onset of headache, mild cerebellar ataxia, dysmetria, and dysarthria. Tendon reflexes were normal, and he did not exhibit Romberg sign, nystagmus, or sphincter disturbance. He was fully alert and eupneic, his body temperature was 37.2°C, and oxygen saturation was 99%.

Four weeks before admission, by tracing his familial cluster of COVID-19 (mother and father), he was found positive for SARS-CoV-2 by reverse transcription polymerase chain reaction (RT-PCR) in nasopharyngeal swab, although he did not experience rhinitis, cough, fever, or loss of smell. At hospital admission, a new nasopharyngeal swab sample was negative. His serum anti-SARS-CoV-2 IgG was elevated. Other laboratory investigations (white cell count, C-reactive protein, coagulation, chest X-ray) were all normal, including antibody, culture, and polymerase chain reactions from a large microbiological panel (see later).

Two days after admission, headache and ataxia subsided. Brain magnetic resonance imaging (MRI) showed diffuse T2-FLAIR hyperintense lesions of the cerebellar cortex with no enhancement or restriction (Fig A and B). Echocardiography, rheumatological, and ophthalmologic evaluations were normal. On third day, ataxia and dysmetria disappeared, whereas dysarthria subsided. On fifth day he was discharged in full health with no recommendation for steroid treatments or rehabilitation.

Two and four weeks after discharge, repeated microbiological analyses were negative, apart from the persistent high titer of anti-SARS-CoV-2 serum IgG. Control brain MRI was performed one month after discharge, which showed an almost complete resolution of the signal abnormalities (Fig C and D).

Acute cerebellitis in children belongs to the group of autoimmune cerebellar ataxias. The diagnosis of acute cerebellitis rather than postinfectious cerebellar ataxia should be considered when MRI changes are noticeable in the cerebellar cortex and headache accompanies ataxia.[2,3] Among the pathogens causing acute cerebellitis, varicella zoster, Epstein-Barr, herpes simplex 1, influenza A, respiratory syncytial virus, rotavirus, cytomegalovirus, echovirus, coxsackie, mumps, measles, rubella, *Mycoplasma pneumoniae,* and *Streptococcus pneumonia* are the most common.[2,3] SARS-CoV-2 has been associated to acute cerebellitis only in two children, although both featured by severe neurological presentations.[1]

On the contrary, our patient had a benign, isolated, acute cerebellitis due to SARS-CoV-2 infection, enlarging the clinical phenotype of this new nosographic entity. The full spectrum of COVID-19-related neurological manifestations in children is not fully elucidated yet,[4] and SARS-CoV-2 can be listed as one of the pathogens causing acute cerebellitis in children, having a heterogeneous clinical severity. A close neurodevelopmental monitoring is warranted for possible long-term sequelae of this new condition.

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Stefano Sotgiu, MD
Child Neuropsychiatry Division, Department of Medical, Surgical and Experimental Sciences, University of Sassari, Sassari, Italy
E-mail address: stefanos@uniss.it.

Sergio Uzzau, MD
Microbiology Division, Department of Biomedical Sciences, University of Sassari, Sassari, Italy

Antonello Pippia, MD
Pediatric Clinic, Department of Medical, Surgical and Experimental Sciences, University of Sassari, Sassari, Italy

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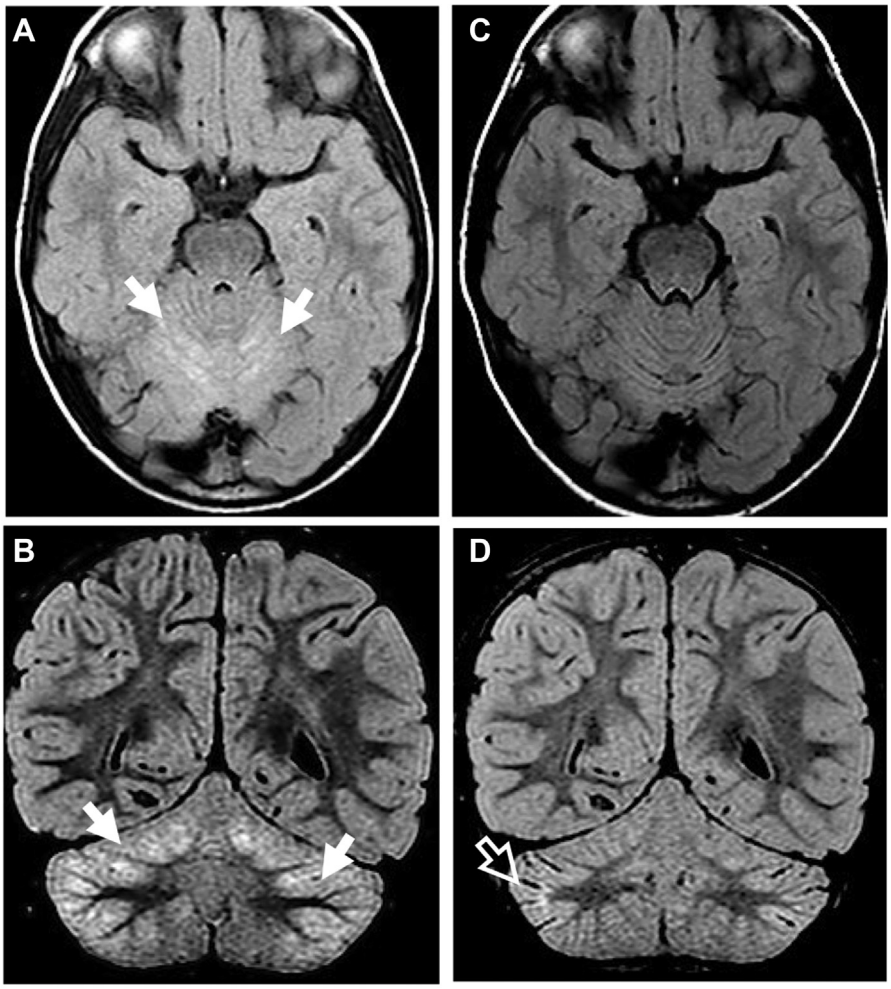

FIGURE. Brain MRI of the child with acute cerebellitis during severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, at the beginning (A, B) and one month after the clinical onset (C, D); (A) axial and (B) coronal FLAIR MRI sequences showing bilateral cortical hyperintense lesions of cerebellar vermis (A; filled arrows) and hemispheres (B; filled arrows) on the second day of hospitalization. One month later, (C) axial and (D) coronal FLAIR MRI images showed disappearance of the vermian hyperintense changes (C) and a decrease of the bilateral hemispheric cortical lesions (D) with residual hyperintensities indicated by a blank arrow on the right cerebellar hemisphere.

Alessandra Carta, MD
Child Neuropsychiatry Division, Department of Medical, Surgical and Experimental Sciences, University of Sassari, Sassari, Italy

Roberto Antonucci, MD
Pediatric Clinic, Department of Medical, Surgical and Experimental Sciences, University of Sassari, Sassari, Italy

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