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Parvovirus B19 and central nervous system: A case series

Parvovirus B19 y sistema nervioso central: una serie de caso

Dear Editor,

Human parvovirus B19 causes "Fifth Disease," which typically presents as a facial rash in children.[1,2] Neurological complications such as encephalitis, seizure syndromes, altered consciousness, meningitis, ataxia, neuropathies, Guillain-Barré syndrome and myelitis may occur.[3–6]

Recently, parvovirus B19 have increased across Europe.[7–10] Our study intends to focus in these infections, particularly central nervous system (SNC) infections, at Hospital Clínico San Carlos (Madrid, Spain) from January 1 to June 30, 2024, comparing results with the same period in 2023. Using IgM value (Parvovirus VIRCLIA IgM Monotest, VIRCELL) as a marker of acute infection, an increase in cases was observed, particularly in June (Fig. 1).

Of the 77 cases identified at our institution in 2024, five patients exhibited neurological symptoms. PCR analysis of cerebrospinal fluid (CSF) confirmed B19 infection in all cases, with Ct values between 5 and 39. Detailed descriptions of these cases, both adult and pediatric, are provided.

Adults, case 1. A 42-year-old male presented with fever, headache and muscular pain in the cervicodorsal region. He had no history of immunosuppression, but his wife was hospitalized for meningococcal meningitis. Empirical treatment with ceftriaxone, vancomycin, and acyclovir was initiated.

CSF with 305 nucleated cells/μL, 99% mononuclear cells, glucose of 49 mg/dl, and protein levels of 113 mg/dl. Multiplex PCR in the CSF detected parvovirus with a Ct20 and HSV Type II with a Ct35. Serum PCR for parvovirus was positive with a Ct5.

Four days later, second lumbar puncture confirmed parvovirus with a Ct of 5 and seroconversion. The patient was discharged after clinical stabilization.

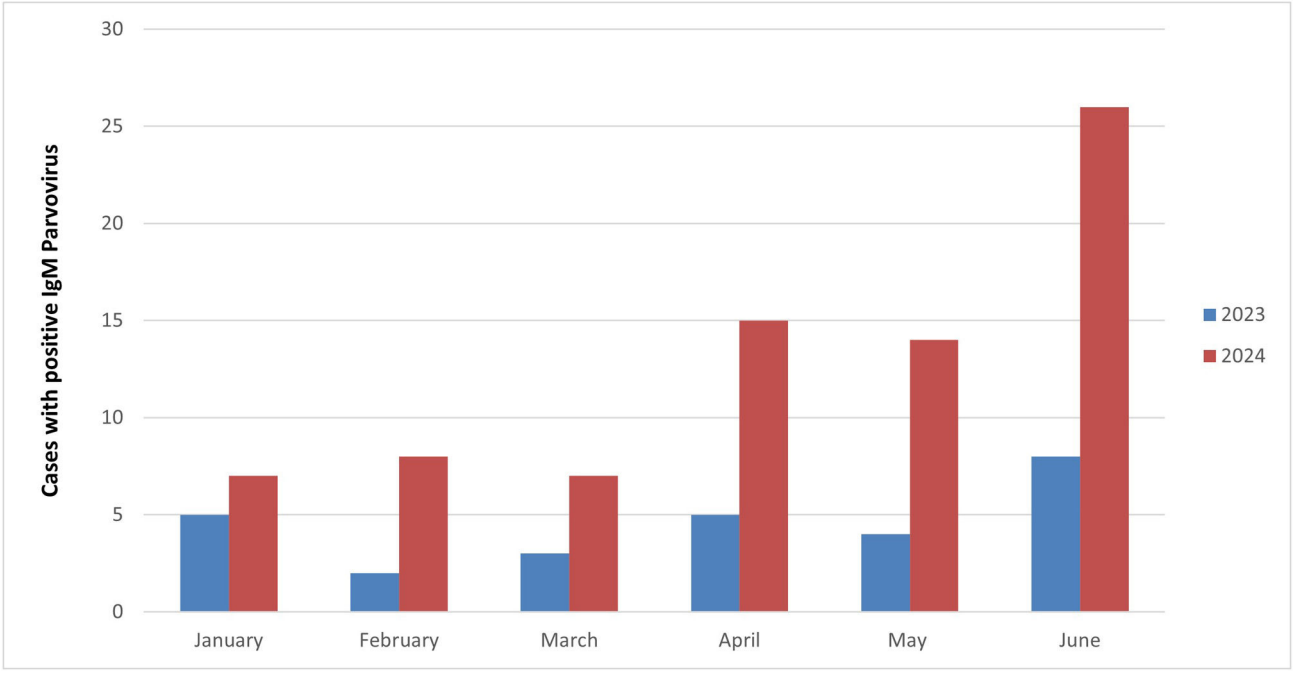

Fig. 1. Evolution of acute parvovirus B19 infections comparing January–June 2023 with January–June 2024.

Adults, case 2. A 34-year-old female experienced several days of 38 °C fever and a diffuse, oppressive headache, nausea and vomiting.

CSF with 3 nucleated cells/μL. CSF glucose was 63 mg/dl and protein was 26 mg/dl. Multiplex PCR detected parvovirus in the CSF with a Ct of 22. Serology revealed positive IgG and IgM for parvovirus with values of 5.42 and 9 respectively.

The patient was discharged after clinical stabilization without specific treatment.

Adults, case 3. A 49-year-old, alcoholic, with a history of multiple sexually transmitted infections (HBV, HAV, Syphilis, Gonorrhea, and *Chlamydia trachomatis*).

After excluding alternative diagnoses such as neurosyphilis, the CSF appeared with 2 nucleated cells/μL. CSF glucose was 56 mg/dl and protein was 221 mg/dl. Multiplex PCR in the CSF detected parvovirus with a Ct of 34. Serum serology showed positive IgM and IgG for parvovirus (6.7 and 8.2 values respectively). Due to the high Ct value, the PCR result was confirmed with an alternative technique (RealCycler Parvovirus B19, Progenie Molecular).

Given the patient's neurological instability, he was treated by Internal Medicine, with no significant changes in his condition after one week.

Pediatric, case 1. A 4-year-old patient presented with a fever of 38 °C, vomiting and limb pain. Influenza A and RSV were positive in the nasopharyngeal swab. Treatment with cefotaxime, vancomycin, acyclovir, and oseltamivir was initiated.

CSF with glucose of 73 mg/dl, proteins of 117 mg/dl and 24 nucleated cells (23% mononuclear). Multiplex PCR in the CSF detected parvovirus B19 with a Ct 39. Serology detected positive IgM and IgG for parvovirus (1.37 and 17.49 values respectively), and serum PCR was positive with a Ct 27.

Immunoglobulin treatment was started, receiving two doses, followed by corticosteroids due to slow improvement. After clinical stabilization, the patient was discharged to her usual residence.

Pediatric, case 2. A 7-year-old patient with multiple seizure episodes in the context of a febrile illness.

CSF with 4 nucleated cells/μL. CSF glucose was 75 mg/dl and proteins were 15 mg/dl. Multiplex PCR in the CSF detected parvovirus with a Ct of 19.

The patient had a favorable outcome. Hospital discharge was decided after 3 days of admission.

These cases highlight the importance of considering parvovirus B19 as a pathogen in SNC infections. Multiplex PCR, alongside traditional serology, is essential for diagnosis. In all of our cases, a low Ct was observed in PCR and the seroconversion previously described.

Neurological manifestations, although rare, can be severe and require prompt treatment. The administration of immunoglobulins and symptomatic management have proven to be effective strategies in treatment of complications.

Therefore, continuous surveillance and research of parvovirus B19 pathophysiology and clinical spectrum are essential to improve diagnostic and therapeutic strategies.

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