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## Neurological aspects of human parvovirus B19 infection: A systematic analysis

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**Background:** Parvovirus B19 has been linked with various clinical syndromes including neurological manifestations. However, its role in the latter remains not completely understood. Although, the last 10 years witnessed a surge of case reports on B19-associated neurological aspects, the literature data remains scattered and heterogeneous, and epidemiological information on the incidence of B19-associated neurological aspects cannot be accurately extrapolated. Our aim was to systematically identify the characteristics of cases of B19-associated neurological manifestations.

**Methods:** A computerized systematic review of existing literature concerning cases of B19-related neurological aspects was conducted using all databases included in Web of Knowledge and PubMed database and following PRISMA guidelines. Data were summarized using percentages and cross tabulations. The 95% confidence intervals for percentages were calculated using the Wilson method. All statistical analyses used the conventional two-sided 5% significance level and were carried out using SPSS version 20 and CIA version 2.0.

**Results:** As shown in Figure 1, 89 articles describing 129 cases of B19-related neurological aspects were considered eligible and further analysed; 79 (61.2%) were associated with central nervous system manifestations, 41 (31.8%) were associated with peripheral nervous system manifestations and nine (7.0%) were linked with myalgic encephalomyelitis. The majority of the cases (50/129) had encephalitis. Clinical characteristic features of the cases were analysed, and possible pathological mechanisms were also described.

**Conclusion:** B19 should be included in differential diagnosis of encephalitic syndrome of unknown aetiology in all age groups. In addition, B19 should be included in differential diagnosis of some peripheral nervous system manifestations such as neuralgic amyotrophy. Diagnosis should rely on investigation of anti-B19 IgM antibodies and B19 DNA in serum or CSF. Treatment of severe cases could benefit from a combined regime of intravenous immunoglobulins and steroids. To confirm these outcomes, goal-targeted studies are recommended to exactly identify epidemiological scenarios and explore potential pathogenic mechanisms of these complications. Performing retrospective and prospective, and multicenter studies concerning B19 and neurological aspects are in demand.

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