Pediatric Oncall Journal (July-September2019)
Volume 16, Issue 3: 96-97
DOI: https://doi.org/10.7199/ped.oncall.2019.41

PEDIATRIC ONCALL
CHILD HEALTH CARE

TEACHING FILES (GRAND ROUNDS)

FEVER WITH RASH OVER PALMS AND SOLES ALONG WITH HEPATOMEGALY – CAN IT BE PARVOVIRUS INFECTION?

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Clinical Problem

A 4-year-old female presented with fever for 5 days. She had red eyes along with fever for the initial 2 days. Subsequently, she developed rash over palms and soles after 2 days of fever, which had resolved without scarring at the time of presentation to us. She had been investigated by the referring doctor and was detected to have pancytopenia (white blood cell count of 3000/mm^3, hemoglobin 8.7 gm/dL, platelets 1,16,000/mm^3) with a bilirubin 2.01 mg/dl. Dengue IgM, HIV Elisa was negative and chest radiograph was normal. She was treated with IV ceftriaxone for the past 3 days in view of clinical suspicion of enteric fever but there was no response and was thus referred to us for further management. On presentation, on systemic examination, she had hepatomegaly. Other systems and vital parameters were normal. We advised for a blood culture, Weil Felix test, Brucella IgM, Leptospirosis IgM, Parvovirus B19 IgM and to continue IV ceftriaxone with monitoring of the hemogram. On next follow up after 6 days, the fever had subsided. Brucella IgM, Leptospira IgM, Weil Felix test was negative. Parvovirus IgM was positive (18.9 mcg/ml). Blood culture did not grow any organism. Hemogram showed an improvement (white blood cell count of 9400/mm^3, hemoglobin 8.8 gm/dL, platelets 2,12,000/mm^3). In view of recovery of hemogram and resolution of fever, the child was not treated for the parvovirus infection.

When to suspect parvovirus infection in a child with fever?

Expert Opinion

Pancytopenia, fever, rash, and hepatomegaly should raise suspicion of enteric fever, leptospirosis and erythema infectiosum. Parvovirus B19 is a DNA virus of the Parvoviridae family. Human Parvovirus B19 (B19V) infection usually causes erythema infectiosum (fifth disease). The "slapped cheek" appearance and lacey erythema of the proximal extremities is the most common clinical manifestation of parvovirus B19 infection, occurring most frequently in school-aged children.[1] In recent decades, several uncommon exanthems have been described in association with B19V.[2] Parvovirus B19 infection may be indistinguishable from other viral illnesses in the absence of the classic exanthema. Children are often febrile, but their appearance is non-toxic and the prodrome is nonspecific.[3] Apart from measles, rubella, exanthem subitum, scarlet fever, and infectious erythema, systemic rashes are also found in other bacterial infections, including leptospirosis, mycoplasma infection, and disseminated gonococcal infection. In addition, systemic rashes are found in tinea versicolor, enteroviral infections, Gianotti-Crosti syndrome and papular-purpuric gloves and socks syndrome.[4] Infection due to parvovirus B19 is self-limiting and has an excellent prognosis. However, in high-risk pediatric groups (e.g. immunocompromised patients, children with hemolytic anemia or prenatal infection), clinical manifestations are of pure red-cell aplasia (PRCA) resulting in chronic or recurrent anemia with reticulocytopenia. Bone-marrow involvement can also manifest as neutropenia, agranulocytosis, pancytopenia, thrombocytopenia, and hemophagocytosis.[5] Treatment is aimed at symptomatic relief, and a vaccine currently is under investigation.[6] Red-cell transfusions may be required till the immune system can reconstitute. If immune reconstitution is not expected or will be delayed, passive administration of B19 antibodies will lead to virus neutralization, resumption of reticulocytosis, and a rise in hematocrit. However, relapses may occur as the passive antibody wanes if the host has not yet been able to produce neutralizing antibody. In the majority of reported cases, only one course of IVIG has been needed for long-term remission.[5] B19V still lacks a specific antiviral therapy although the antiviral activity of cidofovir is shown to be effective.[7]

ARTICLE HISTORY
Received 1 December 2018
Accepted 26 December 2018

KEYWORDS
pancytopenia, fifth disease

Compliance with Ethical Standards

Funding: None

Conflict of Interest: None

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