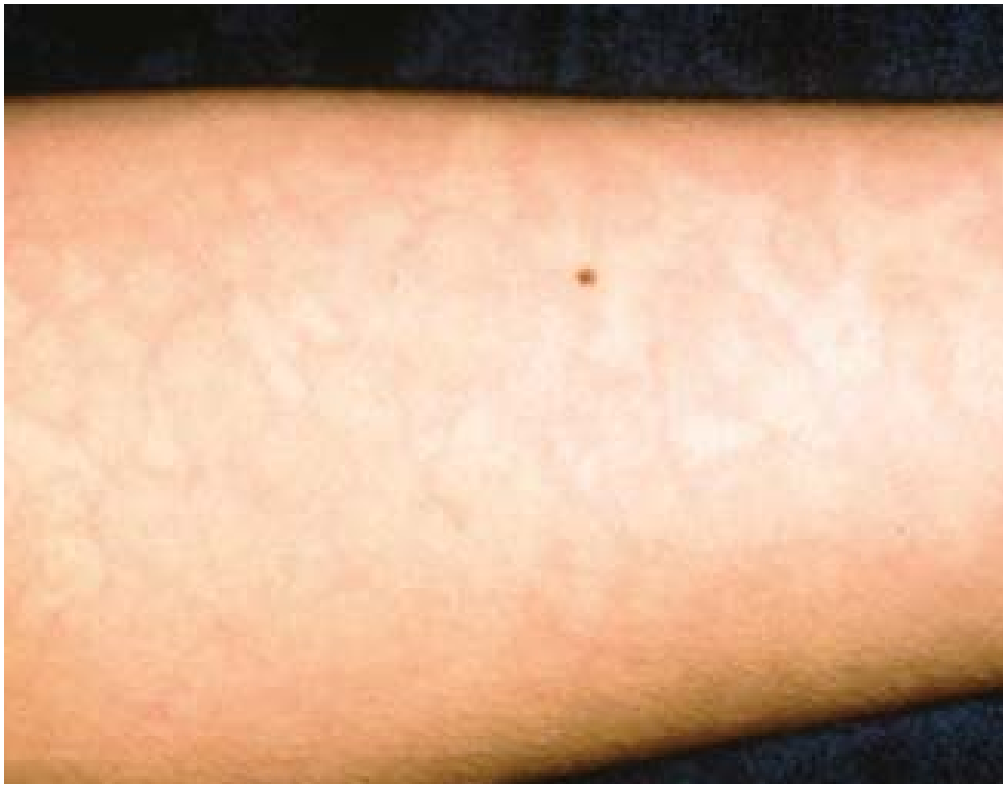
cutis photo quiz

MAJ Sigurd Torgerson, MC, USA
LTC Dirk M. Elston, MC, USA
Brooke Army Medical Center
Fort Sam Houston, TX 78234



A 7-year-old boy presents with an asymptomatic eruption on his trunk and extremities, which has waxed and waned for several weeks. The eruption followed a mild fever and red cheeks. His mother reports that it is much more prominent after he plays outdoors.

What is your diagnosis?

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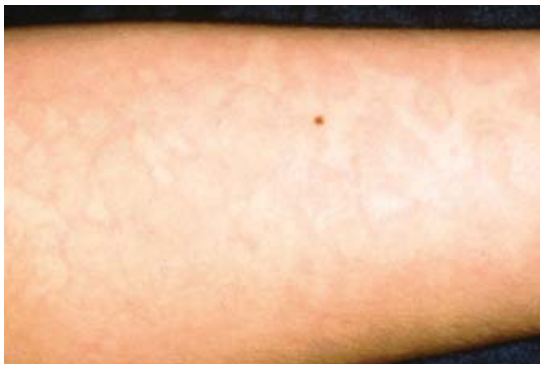
The Diagnosis



Discussion

Erythema infectiosum, also known as fifth disease, is identified clinically by a "slapped cheek" appearance that is often followed by a reticulated exanthem on the trunk and extremities. In some cases, the facial rash is mild, and the reticulated exanthem is the major presenting feature. The reticulated eruption may wax and wane for many weeks, and typically, it is made more prominent by fever, physical activity, or exposure to sunlight. The patients' palms and soles are generally spared, and pruritus can be present or absent. The exanthem often follows a nonspecific prodromal illness of fever and respiratory or gastrointestinal symptoms. However, many patients report no prodromal symptoms.[1-3] Adults often have more subtle dermatologic manifestations of parvovirus B19 infection and more pronounced rheumatic complaints and flu-like symptoms than children.[2] The clinical course of erythema infectiosum in children is generally self-limited and no specific treatment is necessary.

Erythema infectiosum is caused by parvovirus B19, a single stranded DNA virus first associated with erythema infectiosum in 1983, although a viral etiology had been long suspected.[1] Parvovirus B19 selectively infects human erythroid progenitor cells, with the globoside or P blood group antigen being the cellular receptor for the virus.[2] Parvovirus B19 is the only member of the Parvoviridae that causes disease in humans. It has been associated with miscarriage and hydrops fetalis, transient aplastic crisis, and a polyarthropathy syndrome.[2,3]

Approximately half of the adult population has antibodies to parvovirus B19, mostly as a result of asymptomatic infections acquired as children.[2] Outbreaks of erythema infectiosum are common in school environments and are clustered in the late winter and early spring months.[1] Respiratory droplet spread is the most common mode of transmission in these settings. The virus can also be passed transplacentally from mother to fetus and via contaminated blood product.[4]

Once classic cutaneous features of erythema infectiosum have manifested, carriers are no longer infectious; the eruptions are believed to be immune-mediated.[2] The diagnosis can be confirmed using a number of laboratory tests to detect IgM to B19. Anti-B19 IgM antibody capture radioimmunoassay (RIA) is considered the best method for confirming parvovirus B19 infection; however, it is not readily available.[4] Highly sensitive (90% to 97%), enzyme-linked immunosorbent assays (ELISA) are commercially available, but false positive results have been reported because of the presence of other viruses or the rheumatoid factor.[4] Naides reported an ELISA method in which no cross-reactivity between anti-B19 IgM and rheumatoid factor was noted.[5] The presence of IgG antibody directed against B19 indicates prior infection[1] and is not helpful in confirming recent infection. Persons with anti-B19 IgG antibodies have protective immunity to future parvovirus B19 infections. Study volunteers with significant anti-B19 IgG titers did not develop anti-B19 IgM antibody, a marker of acute infection, after inoculation with B19 virus.[5]

During pregnancy, parvovirus B19 may cause fetal anemia, non-immune hydrops fetalis, and fetal death. Although initial retrospective studies concluded that the risk of fetal death after maternal infection by parvovirus B19 could be as high as 38%, subsequent prospective studies have shown fetal death after exposure is "relatively uncommon," with loss rates estimated between 1% and 9%.[4,6] Parvovirus B19 accounts for approximately 10% of all non-immune fetal hydrops.[7] The natural history in most cases of infection is not yet known. Non-immune pregnant women are at significant risk of infection during B19 epidemics, and their risk increases with increasing exposure to children, particularly their own.[6]

Parvovirus B19 infection can also be detected in up to 70% of children with transient aplastic crisis, characterized by anemia, reticulocytopenia, and marrow red cell aplasia. It is believed to be the major infectious cause of aplastic crisis. Parvovirus-induced aplastic crisis can occur in patients with chronic hemolytic anemia, including sickle cell anemia, thalassemia, and autoimmune hemolytic anemia.[2,5] The aplastic crisis is usually self-limited with subsequent antibody production providing future protection.[2]

Adults with parvovirus B19 infection often complain of joint pain and stiffness with accompanying swelling. Symptoms usually involve the hands and feet and are usually bilateral.[3] While the symptoms usually improve within weeks, a chronic rheumatoid-like arthropathy has been associated with parvovirus B19 infection.[5] Some authors suggest parvovirus B19 causes rheumatoid arthritis.[8] Others conclude that serologic studies do not support a causative role for parvovirus B19 in rheumatoid arthritis and note that B19-associated arthropathy generally lacks the erosions and joint destruction present in rheumatoid arthritis.[5]

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