

Erythema Infectiosum

Erythema infectiosum, commonly referred to as Fifth disease, is a viral infection primarily caused by parvovirus B19. This condition is mildly contagious and is commonly transmitted through respiratory droplets. While it primarily affects children between the ages of 5 and 14 years, it can also be observed in adults, particularly pregnant women and those with underlying health conditions. Although many cases are asymptomatic or have mild symptoms, Fifth disease can lead to severe complications in certain vulnerable populations, such as individuals with hemolytic anemia, immunocompromised individuals, and pregnant women. The incubation period for parvovirus B19 infection ranges from 13 to 18 days, and viral shedding typically occurs before the appearance of the rash, meaning isolation is not necessary once the rash is visible.

Etiology and Pathogenesis

The causative agent of erythema infectiosum is parvovirus B19, a single-stranded DNA virus that targets erythroid progenitor cells in the bone marrow, leading to transient anemia. The virus is primarily spread through respiratory secretions such as droplets from coughs and sneezes, and it can also be transmitted via blood products and vertical transmission from mother to fetus during pregnancy. The infection typically resolves on its own, but in certain populations, particularly pregnant women, there are increased risks of fetal complications, such as hydrops fetalis and fetal demise.

Clinical Presentation

The clinical course of erythema infectiosum is marked by three distinctive stages:

- **Facial Erythema ("Slapped Cheek" Appearance):** This stage typically occurs first and involves the rapid onset of red papules on the cheeks. These papules coalesce into red, slightly swollen, warm plaques on both cheeks, sparing the nose and mouth. The characteristic "slapped cheek" appearance can be observed and tends to fade within 4 days.
- **Reticulated Rash:** The second stage appears 1 to 4 days after the facial erythema and consists of a lacy, net-like rash that starts on the arms and later spreads to the trunk. This reticulated or lacy pattern is often the most recognizable feature of the disease and marks the progression of the infection.
- **Recurrent Rash:** The third stage is characterized by a recurrent rash that is generally invisible except when exposed to sunlight or heat. This phase can last for several weeks to months.

Joint Symptoms and Complications

Although the rash is the hallmark of erythema infectiosum, joint symptoms are also commonly seen, particularly in adults, especially women. These can include:

- **Itching:** Often mild to intense, itching may be localized or generalized, and is most frequently observed in women.
- **Arthritis:** Polyarthritis, characterized by symmetric involvement of large joints (commonly the knees), is a frequent manifestation in both adult women and children. This form of arthritis can closely resemble rheumatoid arthritis and may last from 2 weeks to 4 years in severe cases. Joint involvement typically affects large joints (e.g., knees, wrists) and may be polyarticular (more than five joints) or pauciarticular (four or fewer joints). The duration of joint symptoms is generally short, with most cases resolving within 4 months, although some cases can persist for up to 13 months.

Fetal Complications in Pregnancy

In pregnant women, parvovirus B19 infection poses significant risks to the fetus. Infections in the first half of pregnancy are associated with fetal anemia, congestive heart failure, and generalized edema, which may lead to hydrops fetalis and, in severe cases, fetal death. The risk of fetal death is estimated at approximately 10%, though congenital malformations are not typically observed. Vertical transmission from mother to fetus can occur, particularly in the second trimester, and can result in severe outcomes, including miscarriage and stillbirth.

Diagnosis

The diagnosis of erythema infectiosum is primarily clinical, based on the characteristic appearance of the rash. A detailed history of recent exposure to individuals with respiratory infections or rashes can aid in diagnosis. In pregnant women, serological tests (IgM and IgG) can confirm recent infection with parvovirus B19. Polymerase chain reaction testing may also be used to detect the virus in amniotic fluid if fetal infection is suspected.

Treatment and Management

In most cases, erythema infectiosum is self-limiting and does not require specific treatment. The management focuses on alleviating symptoms:

- **Antipyretics:** Acetaminophen or ibuprofen can be used to relieve fever and malaise.
- **Antihistamines:** These may be prescribed for itching associated with the rash.

In cases where joint symptoms are particularly severe, nonsteroidal anti-inflammatory drugs may be used to reduce inflammation and provide relief from arthritis.

For pregnant women, consultation with an obstetrician and serial ultrasounds are recommended to monitor fetal well-being. If fetal infection is suspected, intravenous immunoglobulin has been used in some cases to reduce the risk of complications, although its effectiveness is still under investigation.

Prevention and Public Health Considerations

Since viral shedding occurs before the rash appears, isolation of individuals with erythema infectiosum after the appearance of the rash is not necessary. In most cases, children with Fifth disease do not need to be excluded from school or daycare once the rash is present, although general hygiene practices (e.g., handwashing) should be encouraged to limit transmission.

Conclusion

Erythema infectiosum, or Fifth disease, is a relatively mild viral infection caused by parvovirus B19, primarily affecting children but also presenting challenges for pregnant women and immunocompromised individuals. Most cases resolve spontaneously without the need for specific treatment, and the primary focus of management is symptomatic relief. Though the infection is usually mild, significant complications can occur in vulnerable populations, particularly in pregnancy, where it can lead to fetal anemia and death. Therefore, appropriate management and monitoring are crucial for those at higher risk.

References

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