LabCorp Facets

Detection of Parvovirus B19 Infection

Established in 1982, ViroMed Laboratories began as a private, regional reference laboratory performing infectious disease testing with a focus on virology and a commitment to providing testing services of the highest quality. In a few years, ViroMed's virology/microbiology expertise made it one of the premier private clinical laboratories in the country. Today—in addition to routine virology, serology, and microbiology testing—ViroMed provides services in molecular biology testing using real-time PCR platforms. Other services provided include testing for tissue and eye banks, clinical trials, diagnostic products, and high-volume HIV screening, including contracts with the US Department of Defense.

Introduction

Parvovirus B19 causes a wide spectrum of diseases including erythema infectiosum ("fifth" disease), aplastic crisis in patients with hemolytic anemias, hydrops fetalis, acute arthritis, and persistent anemias and neutropenia in immunocompromised patients. B19 infection occurs worldwide, throughout the year, and in all age groups.[1,2] The virus is transmitted effectively after close contact, and B19 DNA has been found in respiratory secretions of infected individuals, suggesting that this may be the mode of transmission.

Test Options

The virus replicates only in erythroid precursor cells derived from bone marrow. Thus viral isolation in cell cultures is not applicable to the routine screening of clinical specimens. Serologic testing of both IgM and IgG antibody to parvovirus B19 has been successfully used to diagnose B19 infection. The presence of IgM antibody is particularly useful in detecting recent infection. In the immunocompromised patient, however, the inability to mount detectable antibody responses frequently makes serologic testing unreliable.

Polymerase chain reaction (PCR) amplification of parvovirus B19 DNA can be used for the early diagnosis of B19 infection, as B19 DNA precedes the appearance of IgM antibody. IgM antibody testing remains important, however, because serum may be PCR-negative (due to DNA levels below the limit of detection) but IgM-antibody positive; therefore, PCR (in conjunction with IgM antibody testing) offers a sensitive—yet comprehensive—test for the detection of current B19 infection.[2,3]

The molecular biology and serology laboratories at ViroMed offer a profile that includes PCR detection of parvovirus B19 DNA along with IgM and IgG antibody testing for parvovirus B19 infection.

Parvovirus B19 DNA, Amniotic Fluid 138719
CPT 87798
Specimen Amniotic fluid (uncentrifuged), **frozen**
Volume 2-10 mL
Minimum Volume 1 mL
Container Sterile plastic conical tube
Storage Instructions **Freeze** and ship overnight.
Use Detects the presence of parvovirus B19 DNA in clinical specimens. Parvovirus B19 is the cause of a wide spectrum of disease, including erythema infectiosum (fifth disease).
Methodology Polymerase chain reaction with Southern blot confirmation

Parvovirus B19, DNA PCR 138644
CPT 87798
Specimen Serum; bone marrow; or tissue, **frozen**
Volume 1 mL (serum); 1 mL (bone marrow); 250 mg (frozen tissue)
Container Red-stopper (serum) tube; lavender-stopper (EDTA bone marrow) pediatric tube
Storage Instructions Refrigerate serum and bone marrow; **freeze** tissue on dry ice and ship overnight.
Use Detects the presence of Parvovirus B19 DNA in clinical specimens. Parvovirus B19 is the cause of a wide spectrum of disease, including erythema infectiosum (fifth disease).
Methodology Polymerase chain reaction (PCR) with Southern blot confirmation

Parvovirus B19 (Human), IgG, IgM 163303

CPT 86747 (x2)
Synonyms Human Parvovirus B19, IgG, IgM
Test Includes Human parvovirus B19, IgG; human parvovirus B19, IgM
Specimen Serum
Volume 1 mL
Minimum Volume 0.5 mL
Container Red-stopper tube or serum-separator tube
Storage Instructions Maintain specimen at room temperature.
Causes for Rejection Hemolysis; lipemia; gross bacterial contamination
Reference Interval Negative: IgG: <0.8, IgM: <0.8
Use Differential diagnosis of acute or recent infection from past infection with human parvovirus associated with erythema infectiosum (fifth disease), aplastic crisis, and fetal infection
Methodology Enzyme immunoassay (EIA)
Additional Information IgM antibodies are detectable two weeks after exposure. IgG antibody production usually occurs 18 to 24 days after exposure. The presence of IgM antibodies to parvovirus B19 provides definite evidence of recent infection.

References

1. Heegaard ED, Brown KE. Human Parvovirus B19. *Clin Microbiol Rev.* 2002; 15(3):485-505.
2. Young NS, Brown KE. Parvovirus B19. *N Engl J Med.* 2004; 350(6):586-597.
3. Belzer SW, Anderson S, Bankowski MJ. Parvovirus B-19 DNA PCR as an adjunct to serological testing. *J Mol Diagn.* 2002; 4(4):248. Abstract I18.

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