MAYO CLINIC LABORATORIES

Test Definition: EHRCP

Ehrlichia Antibody Panel, Serum

Overview

Useful For

An adjunct in the diagnosis of infection with *Anaplasma phagocytophilum* or *Ehrlichia chaffeensis*

Seroepidemiological surveys of the prevalence of the infection in certain populations

Profile Information

Test Id	Reporting Name	Available Separately	Always Performed
ANAP	Anaplasma phagocytophilum Ab, IgG,S	Yes	Yes
EHRC	Ehrlichia Chaffeensis (HME) Ab, IgG	Yes	Yes

Testing Algorithm

For information see Acute Tick-borne Disease Testing Algorithm.

Special Instructions

- Acute Tick-borne Disease Testing Algorithm

Method Name

Immunofluorescence Assay (IFA)

NY State Available

Yes

Specimen

Specimen Type

Serum

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions: Centrifuge and aliquot serum into a plastic vial.

Forms

If not ordering electronically, complete, print, and send Infectious Disease Serology Test Request (T916) with the specimen.

Specimen Minimum Volume

See Specimen Required

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject
Gross icterus	Reject
Heat-inactivated specimen	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	14 days	
	Frozen	14 days	

Clinical & Interpretive

Clinical Information

Anaplasma phagocytophilum is an intracellular rickettsia-like bacterium that preferentially infects granulocytes and forms inclusion bodies, referred to as morulae. *A phagocytophilum* is transmitted by *Ixodes* species ticks, which also transmit *Borrelia burgdorferi* and *Babesia* species. Infection with *A phagocytophilum* is also referred to as human granulocytic anaplasmosis (HGA) or human granulocytic ehrlichiosis, and symptoms in otherwise healthy individuals are often mild and nonspecific, including fever, myalgia, arthralgia, and nausea. Clues to the diagnosis of anaplasmosis in a patient with an acute febrile illness after tick exposure include laboratory findings of leukopenia or thrombocytopenia and elevated liver enzymes. HGA is most prevalent in the upper Midwest and in other areas of the United States that are endemic for Lyme disease.

Ehrlichia chaffeensis is an intracellular rickettsia-like bacterium that preferentially infects monocytes and is sequestered in parasitophorous vacuoles referred to as morulae. Infections with *E chaffeensis* are also referred to as human monocytotropic ehrlichiosis (HME). *E chaffeensis* is transmitted by *Amblyomma* species ticks, which are found throughout the Southeastern and South-Central United States.

Many cases of HME are subclinical or mild, however, the infection can be severe and life-threatening, particularly in immunosuppressed individuals. Reported mortality rates range from 2% to 3%. Fever, fatigue, malaise, headache, and other "flu-like" symptoms occur most commonly. Leukopenia, thrombocytopenia, and elevated hepatic transaminases are frequent laboratory findings.

Reference Values

ANAPLASMA PHAGOCYTOPHILUM

<1:64

Reference values apply to all ages.

EHRLICHIA CHAFFEENSIS

<1:64

Reference values apply to all ages.

Interpretation

A positive immunofluorescence assay result (titer > or =1:64) suggests current or previous infection. In general, the higher the titer, the more likely the patient has an active infection. Four-fold rises in titer also indicate active infection.

Previous episodes of ehrlichiosis may produce a positive serology result although antibody levels decline significantly during the year following infection.

Cautions

Serology results for IgG may be negative during the acute phase of infection (<7 days post-symptom onset), during which time detection using targeted nucleic acid amplification testing (eg, polymerase chain reaction) is recommended.

Detectable IgG-class antibodies typically appear within 7 to 10 days post-symptom onset.

IgG-class antibodies may remain detectable for months to years following prior infection. Therefore, a single time point-positive titer needs to be interpreted alongside other findings to differentiate recent versus past infection.

Other members of the *Ehrlichia* genus (eg, *Ehrlichia ewingii*) may not be detected by this assay.

Clinical Reference

Centers for Disease Control and Prevention (CDC), Division of Vector-Borne Diseases: Tickborne Diseases of the United States: A Reference Manual for Healthcare Providers. 6th ed. US Department of Health and Human Services; 2022. Accessed September 5, 2024. Available at www.cdc.gov/ticks/tickbornediseases/TickborneDiseases-P.pdf

Performance

Method Description

The patient's serum is diluted and is placed in microscopic slide wells that have been coated with *Anaplasma phagocytophilum*-infected cells or *Ehrlichia chaffeensis*-infected cells. After incubation, the slides are washed and a fluorescein-isothiocyanate conjugate is added to each well. The slides are then read using a fluorescence microscope and significant fluorescent staining of intracellular organisms constitutes a positive reaction.(Dumler JS, Asanovich KM, Bakken JS, Richter P, Kimsey R, Madigan JE. Serologic cross-reactions among Ehrlichia equi, Ehrlichia phagocytophila, and human granulocytic Ehrlichia. J Clin Microbiol. 1995;33[5]:1098-1103; Pancholi P, Kolbert CP, Mitchell PD, et al. Ixodes dammini as a potential vector of human granulocytic ehrlichiosis. J Infect Dis. 1995;172[4]:1007-1012; Dawson JE, Fishbein DB, Eng TR, Redus MA, Green NR. Diagnosis of human ehrlichiosis with the indirect fluorescent antibody test: kinetics and specificity. J Infect Dis. 1990;162[1]:91-95; package insert: *Ehrlichia chaffeensis* IFA IgG. DiaSorin Molecular;

08/2016)

PDF Report
No

Day(s) Performed
Monday through Friday

Report Available
Same day/1 to 3 days

Specimen Retention Time
14 days

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Superior Drive

Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification
This test was developed using an analyte specific reagent. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
86666 x 2

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
EHRCP	Ehrlichia Ab Panel	77165-9

Result ID	Test Result Name	Result LOINC® Value
81157	Anaplasma phagocytophilum Ab, IgG,S	23877-4
81478	Ehrlichia Chaffeensis (HME) Ab, IgG	47405-6