MAYO CLINIC LABORATORIES

Test Definition: ANAP

Anaplasma phagocytophilum (Human Granulocytic Ehrlichiosis) Antibody, Serum

Overview

Useful For

As an adjunct in the diagnosis of human granulocytic ehrlichiosis (anaplasmosis)

Seroepidemiological surveys of the prevalence of the infection in certain populations

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

0.4 mL

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.

Reference Values

<1:64

Reference values apply to all ages.

Interpretation

A positive result of an immunofluorescence assay (IFA) test (titer > or =1:64) suggests current or previous infection with human granulocytic ehrlichiosis (anaplasmosis). In general, the higher the titer, the more likely it is that the patient has an active infection.

Seroconversion may also be demonstrated by a significant increase in IFA titers.

During the acute phase of the infection, serologic tests are often nonreactive, polymerase chain reaction (PCR) testing is available to aid in the diagnosis of these cases (see EPCRB / *Ehrlichia/Anaplasma*, Molecular Detection, PCR, Blood).

Cautions

Previous episodes of human granulocytic ehrlichiosis (anaplasmosis) may produce a positive serologic result.

In rare instances, clinical evidence of infection may also be derived by direct microscopic examination of Giemsa- or Diff-Quik-stained peripheral blood buffy coat smears, which may reveal clusters of round, dark-purple stained, small dots (morulae) in the cytoplasm of polymorphonuclear cells. However, this is a very insensitive method.

Performance characteristics have not been established for hemolyzed or lipemic specimens.

Clinical Reference

Center for Disease Control and Prevention (CDC): Tickborne Diseases of the United States: A Reference Manual for Healthcare Providers. 6th ed. US Department of Health and Human Services; 2022. Accessed May 10, 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. 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; package insert: Anaplasma phagocytophilum IFA IgG. DiaSorin Molecular; Rev. I, 08/12/2016)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

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

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
ANAP	Anaplasma phagocytophilum Ab, IgG,S	23877-4

Result ID	Test Result Name	Result LOINC® Value
81157	Anaplasma phagocytophilum Ab, IgG,S	23877-4