MAYO CLINIC LABORATORIES

Test Definition: CYSTS

Cysticercosis Ab, IgG, S

Overview

Useful For
Aiding in the diagnosis of infection with *Taenia solium* (cysticercosis)

Method Name
Enzyme-Linked Immunosorbent Assay (ELISA)

NY State Available
Yes

Specimen

Specimen Type
Serum

Specimen Required
Container/Tube:
Preferred: Serum gel
Acceptable: Red top
Specimen Volume: 0.5 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	Reject

Specimen Minimum Volume
0.2 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Serum	Refrigerated (preferred)	30 days	
	Frozen	30 days	

Clinical & Interpretive

Clinical Information
Cysticercosis is caused by infection with *Taenia solium*, a tapeworm (cestode). In this form of infection, humans and pigs serve as the intermediate host and have the cystic larval form in their tissues. Humans can also serve as the definitive host for *T solium* and have the adult form in their intestine (known as taeniasis).
Humans acquire cysticercosis by ingesting microscopic *T solium* eggs in contaminated food, water, or on fomites. The eggs enter the environment when they are shed in stool from a person with the intestinal form of infection; this could

be the same patient (autoinfection) or a different patient. Once ingested, the eggs hatch in the intestine to release oncospheres, which invade the intestinal wall and disseminate via the blood to muscles, liver, brain, and other tissues where they form cysts (cysticerci).

Taeniasis occurs when cysticerci are ingested in the undercooked flesh of an infected intermediate host (eg, pig). In the small intestine, cysticerci will evaginate and attach via a scolex to the intestinal wall. They then grow to become mature adult tapeworms. Adults can reside in the intestine for years and grow from 2 to 7 meters with over 500 proglottids, each filled with 50,000 eggs.

While cysticercosis and taeniasis occur globally, in the United States, infections are predominantly encountered in immigrants from Latin and Central America who acquired the infection locally.

The symptoms associated with cysticercosis depend on where the cysticerci localize, their size, number, and stage (degenerating, calcified, etc). The time between initial infection and symptom onset may vary from several months to years. The presence of cysts in the brain or spinal cord, referred to as neurocysticercosis, is the most serious form of disease and, while some individuals may be asymptomatic, many present with seizures (70%-90%), headache, confusion, and difficulty with balance. Cysts present in striated muscle are typically asymptomatic.

Diagnosis of cysticercosis relies on both imaging studies and serologic testing results. Importantly, detection of *T solium* eggs or proglottids in stool by an ova and parasite exam is diagnostic for taeniasis, not cysticercosis. Individuals with taeniasis should be evaluated for cysticercosis by serology since autoinfection can occur.

Due to imperfect sensitivity and specificity of commercially available enzyme-linked immunosorbent assays (ELISA) for cysticercosis, it is recommended that both positive and negative results by commercial ELISA be confirmed by a cysticercosis immunoblot offered through the Centers for Disease Control and Prevention (www.cdc.gov/dpdx/cysticercosis/index.html) for patients strongly suspected to have cysticercosis. Currently available antibody detection assays are unable to distinguish between active and inactive infections.

Reference Values

Negative

Reference values apply to all ages.

Interpretation

Positive:

Results suggest infection with *Taenia solium* (cysticercosis). Confirmatory testing through the Centers for Disease Control and Prevention is recommended. False-positive results may occur in patients with other helminth infections (eg, Echinococcus).

Negative:

No antibodies to *Taenia solium* (cysticercosis) detected. A negative result may not rule-out infection as the sample may have been collected prior to the development of a detectable level of antibodies. Sensitivity is negatively impacted by the presence of few cysticerci or location in areas less accessible to the immune system. Repeat testing on a new sample is recommended for patients at high risk of cysticercosis.

Cautions

Diagnosis of cysticercosis should be based on exposure history, clinical presentation, other laboratory findings, and imaging studies.

False-negative results may occur in severely immunosuppressed patients.

Clinical Reference

1. Garvey BT, Moyano LM, Ayvar V, et al: Neurocysticercosis among people living near pigs heavily infected with cysticercosis in rural endemic Peru. Am J Trop Med Hyg. 2018 Feb;98(2):558-564

2. Rodriguez S, Wilkins P, Dorny P: Immunological and molecular diagnosis of cysticercosis. Pathogens and Global Health.

2012 Sep;106(5):286-298

Performance

Method Description

Purified antigens are coated to a microwell plate. Antibodies in the patient samples bind to the antigens and are determined during the second step by using enzyme-labelled protein A (the conjugate). The enzyme converts the colorless substrate (urea peroxide/TMB) to a blue end product. The enzyme reaction is stopped by adding sulfuric acid and the color of the mixture switches from blue to yellow at the same time. The final measurement is carried out at 450 nm on a photometer using a reference wavelength greater than or equal to 620 nm.(Package insert: RIDASCREEN Taenia solium IgG. R-Biopharm AG; 6-10/2016)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

This test has been modified from the manufacturer's instructions. 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

86682