USEFUL FOR

Detection of antibodies to Echinococcus species, including *E. multilocularis* and *E. granulosus*

CLINICAL INFORMATION

Echinococcosis, also referred to as hydatidosis or hydatid disease, is one of the 17 neglected tropical diseases recognized by the World Health Organization, and affects over 1 million people worldwide. *Echinococcus* species are tapeworms or cestodes and 2 main species infect humans: *Echinococcus granulosus* and *Echinococcus multilocularis*.

With respect to geographic distribution, *E. granulosus* can be found worldwide, but more frequently in rural, grazing areas where dogs may feed on deceased, infected sheep or cattle. *E. multilocularis* is largely localized to the northern hemisphere. The definitive hosts for *E. granulosus* are dogs or other canids, while the definitive host for *E. multilocularis* are foxes and, to a much lesser extent, canids. *Echinococcus* tapeworms reside in the small intestine of definitive hosts and release eggs that are passed in the feces and ingested by an intermediate host, typically sheep or cattle in the case of *E. granulosus* or small rodents for *E. multilocularis*. The eggs hatch in the small bowel, releasing an oncosphere, which penetrates the intestinal wall and migrates through the circulatory system to various organs where it will develop into a cyst that gradually enlarges producing protoscoliccies and daughter cysts that fill the interior. The definitive host becomes infected following ingestion of these infectious cysts. Humans become accidentally infected following ingestion of *Echinococcus* eggs.

In humans, *E. granulosus* (cystic echinococcal disease) cysts typically develop in the lungs and liver and the infection may remain silent or latent for years (5–20 years) prior to cyst enlargement and symptom manifestation. Symptomatic manifestations include chest pain, hemoptysis and cough for pulmonary involvement and abdominal pain and biliary duct obstruction for liver infection. *E. multilocularis* (alveolar echinococcal disease) infections manifest more rapidly than those of *E. granulosus*, and manifests similar to a rapidly growing, destructive tumor resulting in abdominal pain and biliary obstruction. Rupture of cysts can produce fever, urticaria and anaphylactic shock.

Diagnosis of echinococcal infections relies on characteristic finding by ultrasound or other imaging techniques and serologic findings. Fine needle aspirates of cystic fluid may be performed; however they carry the risk of cyst puncture and fluid leakage which may potentially lead to severe allergic reactions. Importantly, infected individuals do not shed eggs in stool.

REFERENCE VALUES

Negative

ANALYTIC TIME

Same day/1 day
**INTERPRETATION**

**Negative**
The absence of antibodies to *Echinococcus* species suggests that the individual has not been exposed to this cestode. A single negative result should not be used to rule out infection.

**Equivocal**
Consider repeat testing on a new serum sample in 1 to 2 weeks.

**Positive**
Results suggest infection with *Echinococcus*. False positive results may occur in settings of infection with other helminths, or in patients with chronic immune disorders. Results should be considered alongside other clinical findings and exposure history.

**CLINICAL REFERENCE**