Eosinophilic meningitis

Meningitis is a disease that occurs when the membranes around the brain and spinal cord (meninges) become inflamed. There are several types of meningitis, including one caused by parasites, which is fairly rare and preventable.

The Disease

Eosinophilic meningitis is a rare type of meningitis that usually results from a parasitic infection. The parasite that causes it is called *Angiostrongylus cantonensis*, also known as the rat lungworm. Infected rodents excrete immature forms of the parasite (larva) in their feces. Snails and slugs that eat the contaminated feces become contaminated.

People become infected by eating raw or undercooked snails or slugs that are carrying the parasite. People can also contract it by eating improperly prepared frogs, freshwater prawns or fish. Unwashed produce can also lead to infection. The infection cannot pass from person to person, or directly from a rat to a person.

The parasites gradually die on their own in the human body, and most infected people recover within about six weeks without any treatment. Some people who ingest the parasite may not show any symptoms. Most infected people will only become mildly ill, suffering headache, low fever, nausea and/or vomiting.

Eosinophilic meningitis can occur if the larvae move from the digestive system into blood vessels, which eventually carry them to the brain and spinal cord. The parasite can cause intense inflammation. This can happen as soon as two days or as long as six weeks after the patient ingests the parasite. Symptoms of eosinophilic meningitis can include headache, stiff neck, fever, nausea, vomiting and tingling or painful feelings in the skin. Children are especially likely to have a fever if they suffer from eosinophilic meningitis. They may also lose muscle control or strength, especially in their lower limbs.

Even those people who develop parasite-related meningitis usually recover on their own. Occasionally, the disease is severe enough to cause long-term neurological effects, or even death. The disease's intensity may vary...
depending on the patient's age and underlying medical conditions.

**Treatment**
Infected people may receive medical care to alleviate symptoms, such as pain medication for headache. The infection itself is often not treated. Sometimes treatment can lead to rapid, simultaneous death of all the parasites, which may cause the patient's symptoms to worsen considerably.

Patients with severe meningitis symptoms may need to be hospitalized to have their symptoms managed. Measures used may include the use of lumbar punctures (spinal taps) and steroid medications.

**Risk to Travelers**
The parasite *Angiostrongylus cantonensis* is most common in Southeast Asia and the Pacific Basin, though it is also present in Puerto Rico, Cuba, the Dominican Republic, and the Caribbean Islands. People in the United States have become ill after returning home from international travel (notably, 12 travelers became ill in 2002 following a trip to Jamaica).

There is no vaccine to prevent eosinophilic meningitis. The best way to prevent the disease is to avoid eating contaminated foods.

Don't eat raw or undercooked snails or slugs, especially in areas where the parasite is known to live. If you handle snails or slugs, wear gloves and wash your hands. Thoroughly wash fresh produce with clean water before eating.

It is always advisable to keep track of any symptoms you develop during or after travel, and to share your travel history with doctors and other medical personnel who may be treating you. If you develop meningitis symptoms after traveling, seek medical care promptly. Make sure to tell your healthcare provider where you went and if you may have had exposure to unwashed produce and/or undercooked food. Mention all destinations you have visited in the past three months, since the incubation period can be lengthy.

*Center for Disease Control Angiostrongylus cantonensis Fact Sheet*
*Canada Medical Association Journal's Travel Warning* (issued in 2002)