

Acquired:

Humans become infected by eating raw, pickled, or poorly cooked fish containing the metacercariae. Humans become infected by ingestion of parasitized fish that is raw, inadequately cooked, or improperly pickled or salted.

Metacercariae can survive for up to 7 days in salted fish. Off the coast of Israel a brackish-water fish, *Mugil capito*, can be heavily infected with *H. heterophyes*, with metacercariae numbering 2,300 to 6,000 per g of fish.

Epidemiology:

Numerous fish-eating mammals, including dogs, cats, and birds, act as reservoirs. The infection is found in China, Egypt, India, Iran, Israel, Japan, Korea, Sudan, Taiwan, the Philippines, Tunisia, and Turkey. Snails serving as the first intermediate host include *Pironella* and *Cerithidea* spp., and a variety of freshwater fish can serve as the second intermediate hosts.

Clinical Features:

Following ingestion of metacercariae, the prepatent period is approximately 9 days. The adult worms produce little damage to the intestinal tract mucosa except for a mild inflammatory reaction. In heavy infections, the worms produce abdominal pain, mucous diarrhea, and ulceration of the intestinal wall. Because of the small size of the eggs and the fact that the adult may attach itself deeply into the intestinal wall, some of the eggs may end up in the general circulation of the host. The eggs may provoke pathologic lesions, particularly in the heart and brain. In the Philippines, 15% of fatal heart disease may be a result of heterophyid myocarditis. Neurologic manifestations due to adult worms or eggs in the brain have been reported.

Clinical Specimen:

Stool: Confirmation of the infection depends on finding the small, operculated eggs in a routine stool examination

Laboratory Diagnosis:

Stool: The routine sedimentation concentration is recommended. Since the eggs are operculated they cannot be recovered from the zinc sulfate flotation method.

Organism Description:

Egg: The eggs of *H. heterophyes*, *Metagonimus yokogawai*, and *Clonorchis sinensis* appear almost identical and are very difficult to differentiate from one another. When passed, each egg contains a miracidium larva, but the eggs are ingested by the snail before they hatch. They measure approximately 27-31 microns.

Laboratory Report:

Heterophyes type eggs recovered

Treatment:

Praziquantel is the drug of choice and can be given in a single dose of 15 to 25 mg/kg at bedtime.

Garcia, L.S. 2007. Diagnostic Medical Parasitology, 5th ed., ASM Press, Washington, D.C.

Control:

The life cycle could be disrupted by improved sanitary conditions and educational information about proper sewage disposal away from ponds or lakes where the intermediate hosts reside.