



## Foodborne trematode infections

### Clonorchiasis

#### Introduction

Clonorchiasis, or Chinese liver fluke disease, is caused by infection with *Clonorchis sinensis*. Adult *C. sinensis* flukes may measure up to 20 mm x 5 mm.

#### Epidemiology

Clonorchiasis is a common infection of dogs and other fish-eating carnivores (reservoir final hosts) in China, the Democratic People's Republic of Korea, the Republic of Korea and Viet Nam. The transmission cycle is similar to that of both opisthorchiasis viverrini and opisthorchiasis felinae. Adult flukes inhabit the bile ducts and lay eggs that are dispersed into the environment during defecation. When they reach fresh water, eggs develop into miracidia that are ingested by various species of aquatic snails.

The miracidia further develop and reproduce asexually into cercariae (larvae). Cercariae leave the snail and swim to penetrate beneath the scales of various species of carp-like freshwater fish where, as metacercariae, they encyst in the subcutaneous tissue. When dogs or other carnivores eat raw fish, the metacercarial cysts hatch in the intestine and the young worms migrate to the bile ducts, thus completing the cycle.

#### Disease

Humans may substitute reservoir hosts in the transmission cycle when they eat raw, salted, pickled, smoked, marinated, dried, partially cooked or poorly processed fish, thus ingesting the metacercariae. **In humans, acute clonorchiasis may be asymptomatic or scarcely symptomatic in light infections,** but if the number of worms is significant (up to several thousands), fever and right upper-quadrant pain are not infrequent and may be associated with intermittent colic pain caused by the worms obstructing the gallbladder.

Chronic clonorchiasis, which results from protracted episodes of re-infection over time, may be most severe. The presence of the worms in the walls of the smaller bile ducts causes chronic inflammation, resulting in fibrosis of the ducts and destruction of the adjacent liver parenchyma. Cholangiohepatitis, or recurrent pyogenic cholangitis, is also frequent. Chronic clonorchiasis is strongly associated with cholangiocarcinoma, a severe and often fatal form of bile duct cancer. The International Agency for Research on Cancer (IARC) classifies *C. sinensis* as a Group 1 agent (*carcinogenic to humans*).

#### Diagnosis, treatment and control

#### Resources and Publications



[WHO estimates of the global burden of foodborne diseases](#)  
5 August 2015

[Multicriteria-based ranking for risk management of food-borne parasites](#)  
Report of a Joint FAO/WHO Expert Meeting, 3–7 September 2012, FAO Headquarters, Rome, Italy.  
5 August 2014

[Global burden of human food-borne trematodiasis: a systematic review and meta-analysis](#)  
5 March 2012

[See all publications on foodborne trematode infections](#)

#### Quick links

[Fact sheet on Foodborne trematodiasis](#)

#### More Information



[Global burden of foodborne diseases](#)  
[Neglected zoonotic diseases](#)  
[Neglected tropical diseases](#)

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Diagnosis is made on the basis of the clinical picture, on the anamnestic recall of consuming raw fish, on the detection of eosinophilia, and on typical findings of ultrasound, computed tomography or magnetic resonance imaging scans. Confirmation of diagnosis relies on different types of diagnostic techniques:

- **parasitological techniques** to detect *Clonorchis* eggs in stool samples; their cost and sensitivity may vary according to the type of technique used; they can only be employed in the chronic phase; some techniques, such as the Kato-Katz thick smear, quantify the intensity of infection (allowing estimation of the severity of the infection);
- **immunological techniques** to detect worm-specific antibodies in serum samples or worm-specific antigens in serum or stool samples; they are usually more sensitive than the commonly used parasitological techniques; detection of antibodies does not distinguish between current, recent and past infections; their ability to quantify intensity of infection is disputed; stool tests are easier to perform and reportedly better accepted by individuals in endemic areas; these techniques are still at an experimental stage;
- **molecular techniques** such as polymerase chain reaction are also at an experimental stage.

Praziquantel is the only medicine recommended by WHO for treatment of clonorchiasis. It should be administered at the dose of 25 mg/kg 3 times daily for 2–3 consecutive days or of 40 mg/kg, single administration.

For the purposes of public health control, WHO recommends carrying out community diagnosis at the district level, and implementing preventive chemotherapy with praziquantel at a dosage of 40 mg/kg, single administration, as indicated by the attached table:

#### [Recommendations for community diagnosis](#)

Complementary interventions such as information, education and communication on safe food practices, improved sanitation and veterinary public health measures should also be implemented in order to decrease transmission rates.