Fasciola spp. ,*Dicrocoelium* spp. & *Clonorchis* spp.

Practical Parasitology

3rd Class

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Fasciola hepatica

Kingdom: Animalia
Phylum: Platyhelminthes
Order: Plagiorchiida
Family: Fasciolidae
Genus: *Fasciola*
Species : *F. hepatica*


Adult of *F. hepatica*

Name of Diseases : Fascioliasis , or liver flukes.

Intermediate Host : Snail(Lymnaeidae) *Lymnaea, Galba, Fossaria, Pseudosuccinea.*
Definitive host: *Fasciola hepatica* are parasites of domestic and wild ruminants (sheep, bovine, goats; camels). Infection occasionally occurs in non- ruminant herbivores, including horses and rodents. Detection of *Fasciola* spp. Eggs in the feces of carnivores likely represent a pseudo-passage after consumption of contaminated liver.

Site Infection: The liver in particular, the main and the digestive system in general.

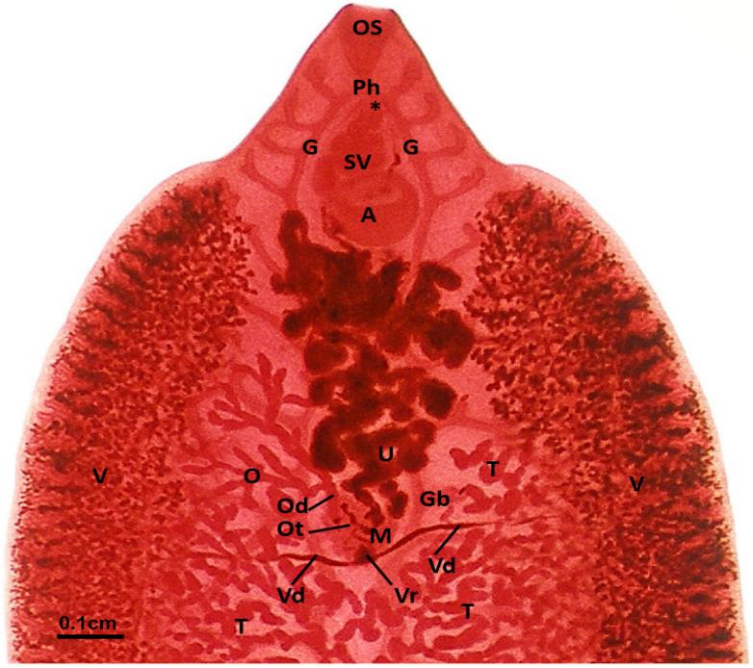
Eggs of *F. hepatica* are oval, and have a thin, smooth shell and an operculum (lid) at one end. When passed, each egg contains a mass of cells. It is fairly difficult to distinguish the eggs of *F. hepatica* from those of *F. magna*


Eggs of *F. hepatica*

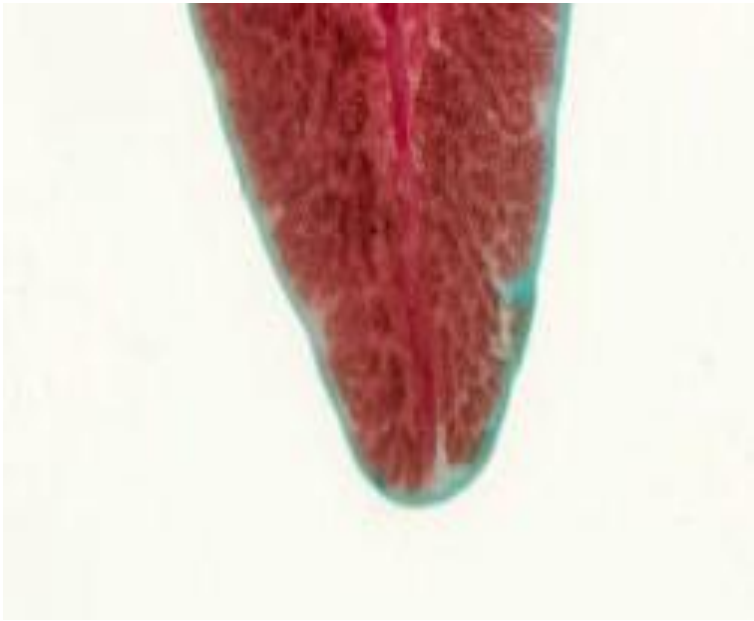
Cercaria has the ability to move freely through the water for a period of time. And lose their tail when adhere to the aquatic plants, turning into metacercaria . The latter constitutes the infective form of the definitive host (mammals).

Adult: *F. hepatica* like leaf shape measure up to approximately 30 mm by 13 mm and have distinct "shoulders" immediately behind the cone-shaped anterior part of the body. The tegument of the fluke is covered with sharp spines. The oral and ventral suckers, and many of the internal structures, particularly elements of the alimentary and reproductive systems, can easily be seen microscopically in fixed, stained specimens. It is hermaphrodite (male and female reproductive organs are present on the same parasite)


Cercaria of *F. hepatica*



Fasciola hepatica anterior end



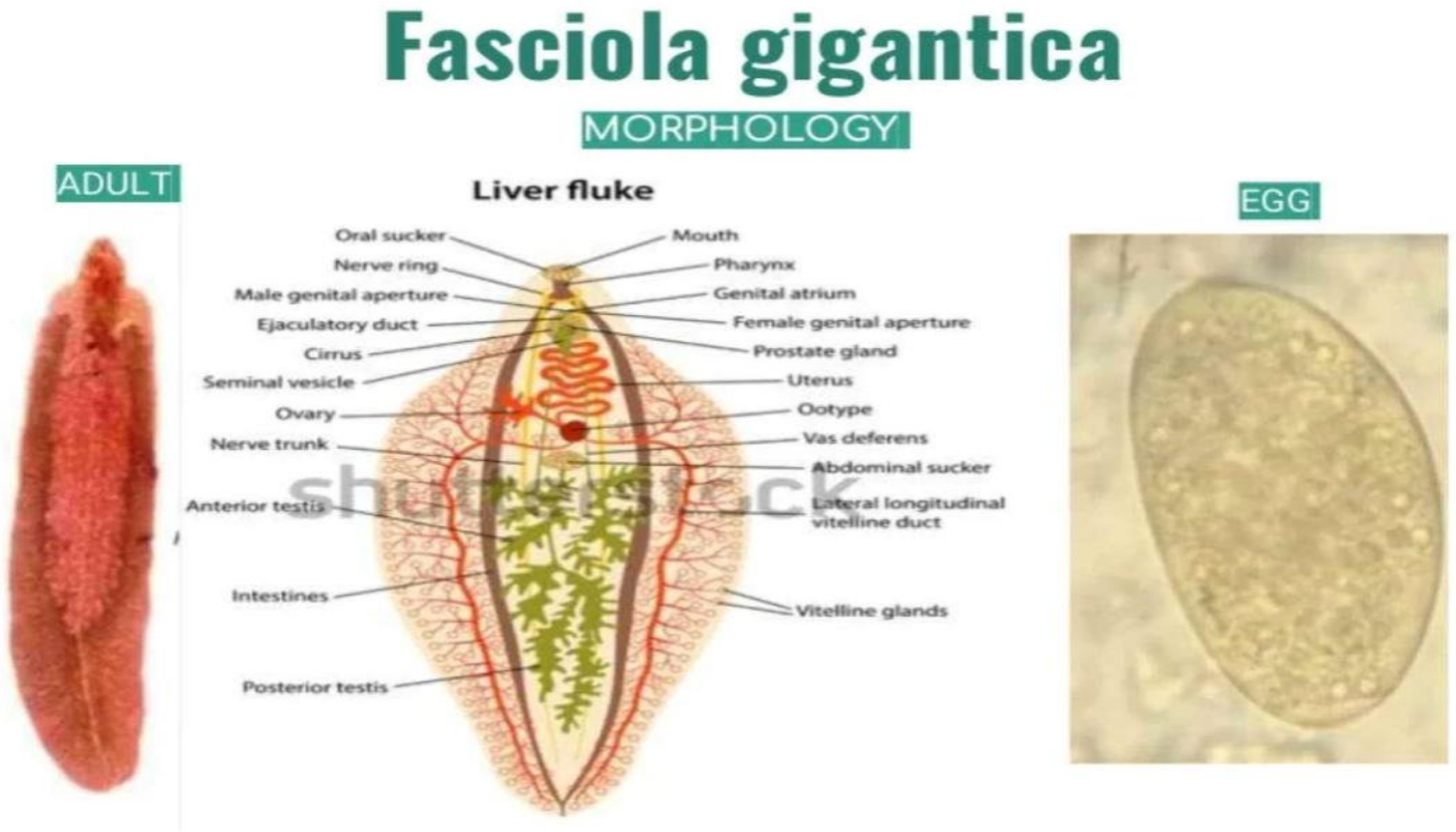
Fasciola hepatica posterior end

Fasciola hepatica miracidia

Fasciola hepatica redia

Diagnoses: The infection typically is diagnosed by examining stool (fecal) specimens under a microscope. The diagnosis is confirmed if Fasciola eggs are seen. More than one specimen may need to be examined to find the parasite. Certain types of blood tests also may be helpful for diagnosing Fasciola infection.

Fasciola gigantica



Name of Diseases : Fascioliasis is one of the world wide parasitic disease (common in ruminants)sheep, goat, cattle, buffaloes, camels swine, horses, donkeys and rabbits.

Intermediate Hosts: Egyptian freshwater snails (*Radix natalensis*),European ear snail (*Radix auricularia*), in Iraq (*Lymena arcularia*).

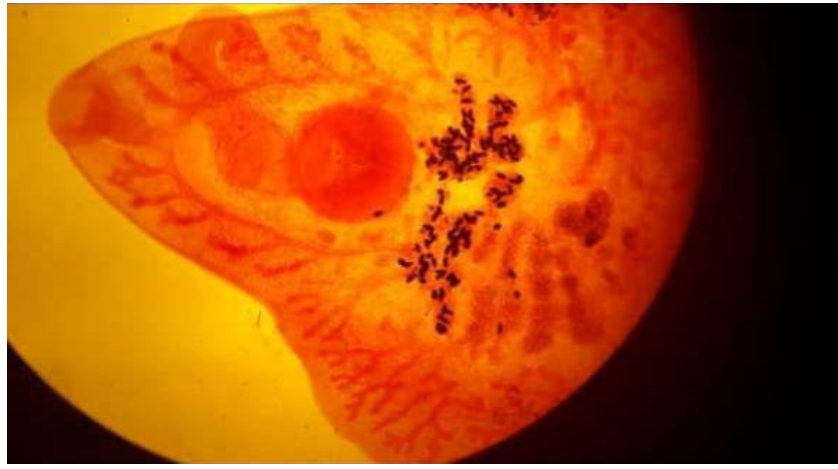
Final hosts was wet environments. African buffalo, Domestic cattle , Domestic goats, Domestic pigs, sheep , Wild boar and Humans.

Site infection: The liver in particular, the main and the digestive system in general.

Diagnostic features :*Fasciola gigantica* very rarely infects humans, the life cycle, transmission, morphology, clinical representation and treatment of the F. gigantica trematodes are very similar to those of Fasciola hepatica. An adult can grow to 75 mm in length. With the use of a scanning electron microscope the surface of F. gigantica appears very rough due to abundant microscopic spines and surface folding. Spikes range from 30 µm to 58 µm and have serrated edges with anywhere from 16 to 20 sharp points.

Fasciola gigantica also has three different types of surface papillae which are used as sensory receptors.

The eggs of F. gigantica can reach sizes of 0.2 mm in length.



Fasciola gigantica anterior end

Diagnoses: The infection typically is diagnosed by examining stool (fecal) specimens under a microscope. The diagnosis is confirmed if *Fasciola* eggs are seen. More than one specimen may need to be examined to find the parasite. Certain types of blood tests also may be helpful for diagnosing *Fasciola* infection.

Dicrocoelium spp.

Kingdom: Animalia

Phylum: Platyhelminthes

Class : Trematoda

Order: Plagiorchiida

Family: Dicrocoeliidae

Genus: *Dicrocoelium*

Species : *D. Dendriticum , D . Hopes, D. lanceolatum*

Name of Diseases :Dicrocoeliosis commonly known as the 'lancet fluke' or 'small liver fluke'.

D. dendriticum is a small lancelet Trematoda parasite that commonly infects the biliary tract of animals (mainly ruminants) and human.

Intermediate host: include a wide variety of air-breathing land snail species

Final host: Flukes worm of cattle, sheep, goats and pigs and other wild animals as major. It occasionally infests dogs, human and various non-human primate species

Worldwide distribution but prevalence varies strongly depending on the regions. *D. hospes* found in Africa

Site of infection: That usually affects the gallbladder and bile ducts of herbivores.

Infection stage : embryonated ova, cercaria and metacercaria.

Morphology:6-10 mm long, 1.5-2.5 mm wide, pointed ends, Cuticle being smooth, Tests are lobe and located anterior to the ovary in anterior half of body. Uterus appear coils in middle field of body

Eggs of *Dicrocoelium dendriticum* :Are operculated and measure 35-45 µm long by 20-30 µm wide. The eggs are thick-shelled and usually dark brown in color.

Eggs are fully embryonated when shed in feces.

Adults of *Dicrocoelium* spp.: 5 to 15 mm long and 1.5 to 2.5 mm, wide are flattened and taper at both the anterior and posterior ends. The paired testes lie just behind the anteriorly-located ventral sucker (acetabulum). The ovary is small and located behind the testes. Adults reside in the bile ducts of the definitive host.

Diagnose: Traditionally, involves the identification of *Dicrocoelium dendriticum* eggs in the faeces of human or other animal. However, in humans, eggs in the stool may be a result of ingesting raw infected animal liver and may not in fact indicate Dicrocoeliosis. Therefore, examining bile or duodenal fluid for eggs is a more accurate diagnostic technique in combination with a liver-free diet.

Clinical Signs: Most infected animals show no signs; Severe infections may cause Anemia, Edema, Abdominal discomfort, Weight loss..

Clonorchis spp.

Kingdom: Animalia
Phylum: Platyhelminthes
Order: Plagiorchiida
Family: Opisthorchiidae
Genus: Clonorchis
Species: *Clonorchis sinensis*

Intermediate Host : First inter. Host are Snails: *Parafossarulusmanchouricus*, and the2nd are Fish 12 species of fish are capable of passing the infection to human.

Final or Definitive host: was mammals Humans are the principal definitive host when eating fishes, but dogs and other fish-eating canines act as **reservoir hosts**.

Geographical Distribution: Far East countries such as China, Japan, Korea and Vietnam.

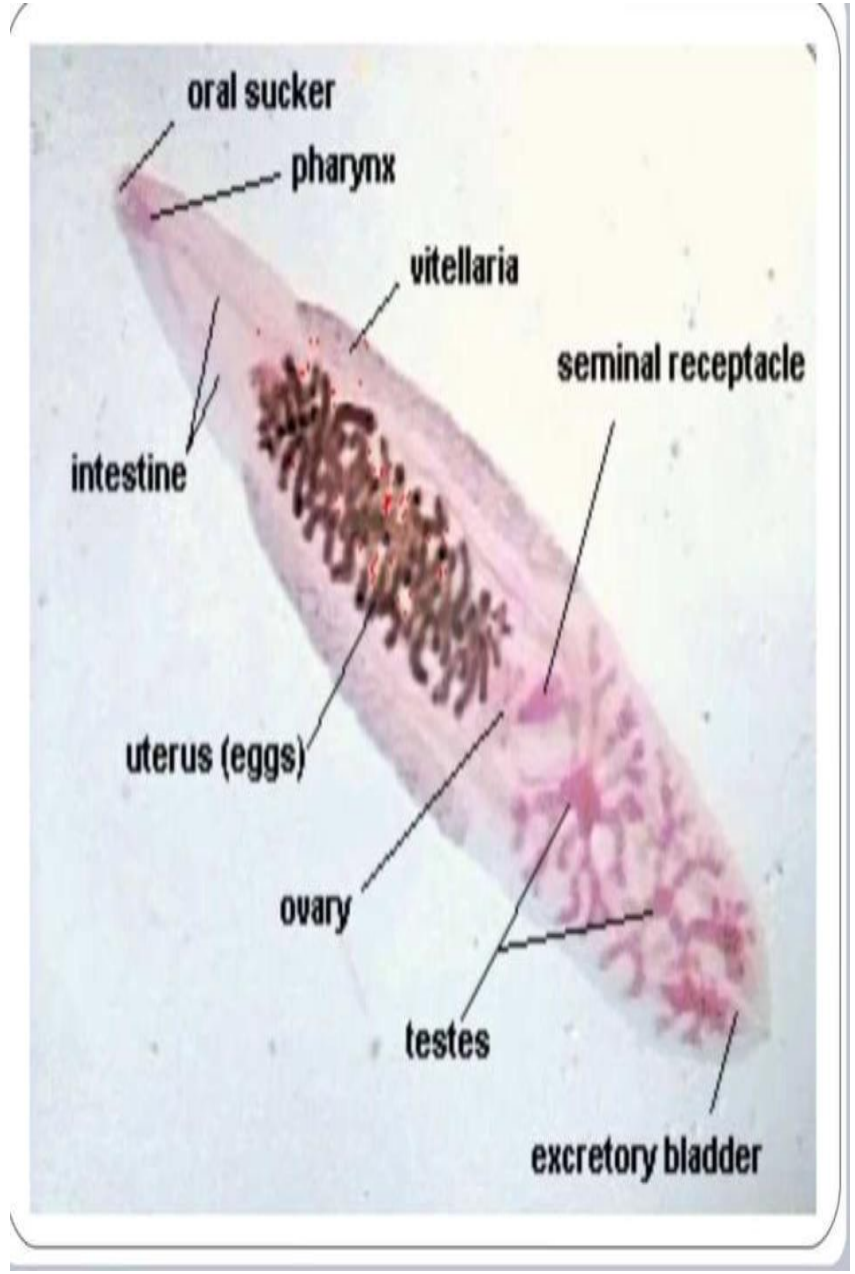
Site Infection: adult worms live in the terminal branches of the bile ducts.

Diagnostic features : Adult shape is flat, elongated, and soft to the touch (without thorns), with a bright gray color, and when it is yellow, it turns golden and contains two mouthfuls and another abdominal one located at the end of the first five of the body.

The digestive system consists of a spherical pharynx that leads to two wide intestinal rings and ends with a closed end near the back of the body.

The male reproductive system consists of two lobed testicles, one ahead of the other and located in the back of the body.

The female reproductive system consists of a slightly lobed and small ovary located in the last third of the body. As for the uterus, it is slightly curved, located in the middle of the body, and opens into the common genital opening.



Eggs : Small, oval in shape with a thick brownish-yellow shell. There are two edges of the egg from the top and a small scar from the bottom, which is a diagnostic characteristic.

Egg of *C. sinensis*

Diagnoses: Depends on the presence of eggs of these worms when direct microscopic examination of stool smears or using concentration methods Examination of the contents of the duodenum.

WITH MY BEST WISHES