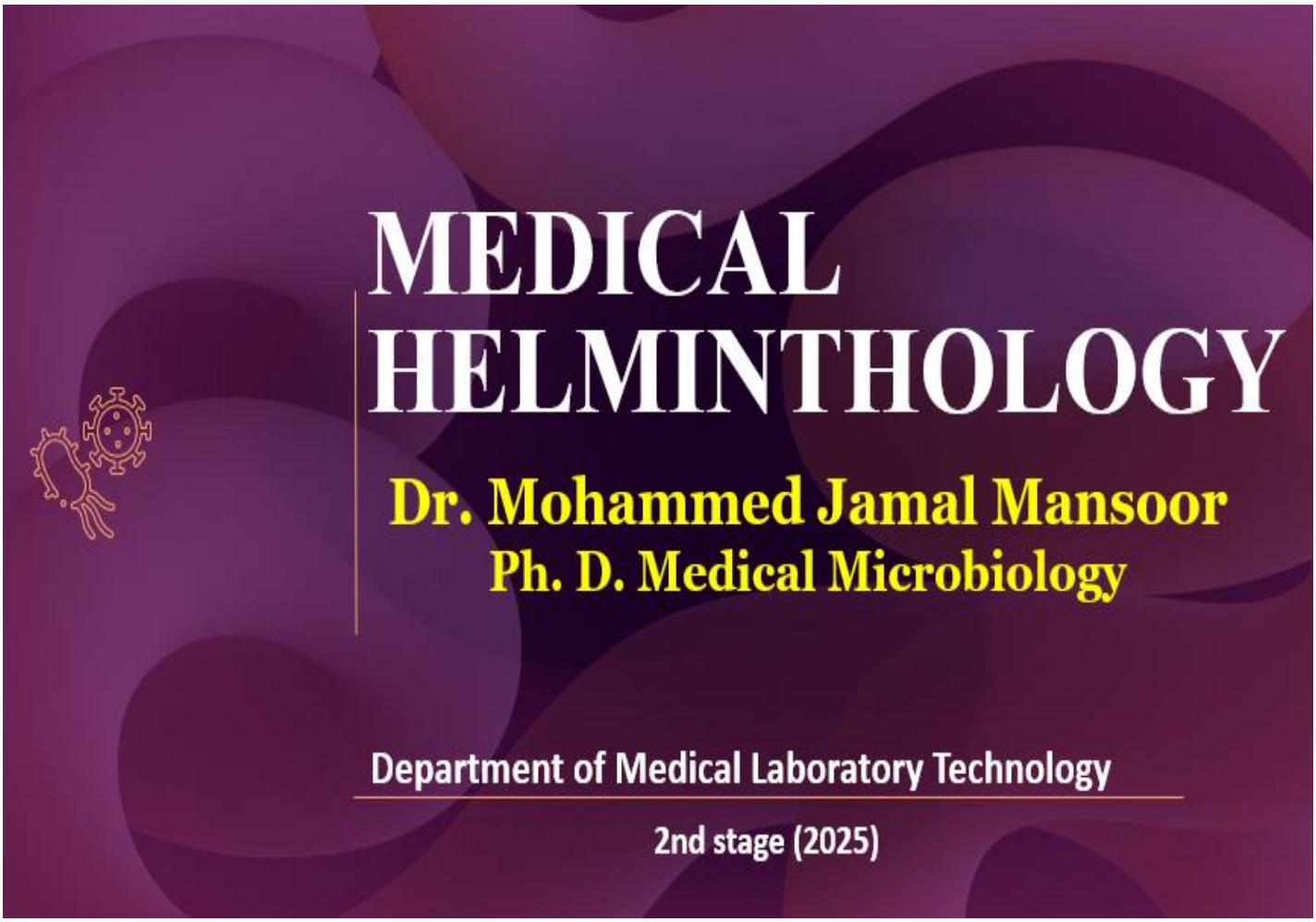
MEDICAL
HELMINTHOLOGY
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2nd stage (2025)

Medical Helminthology – 2nd stage (2025)
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Lec.5 *Fasciola hepatica*

Key Points of *Fasciola hepatica*

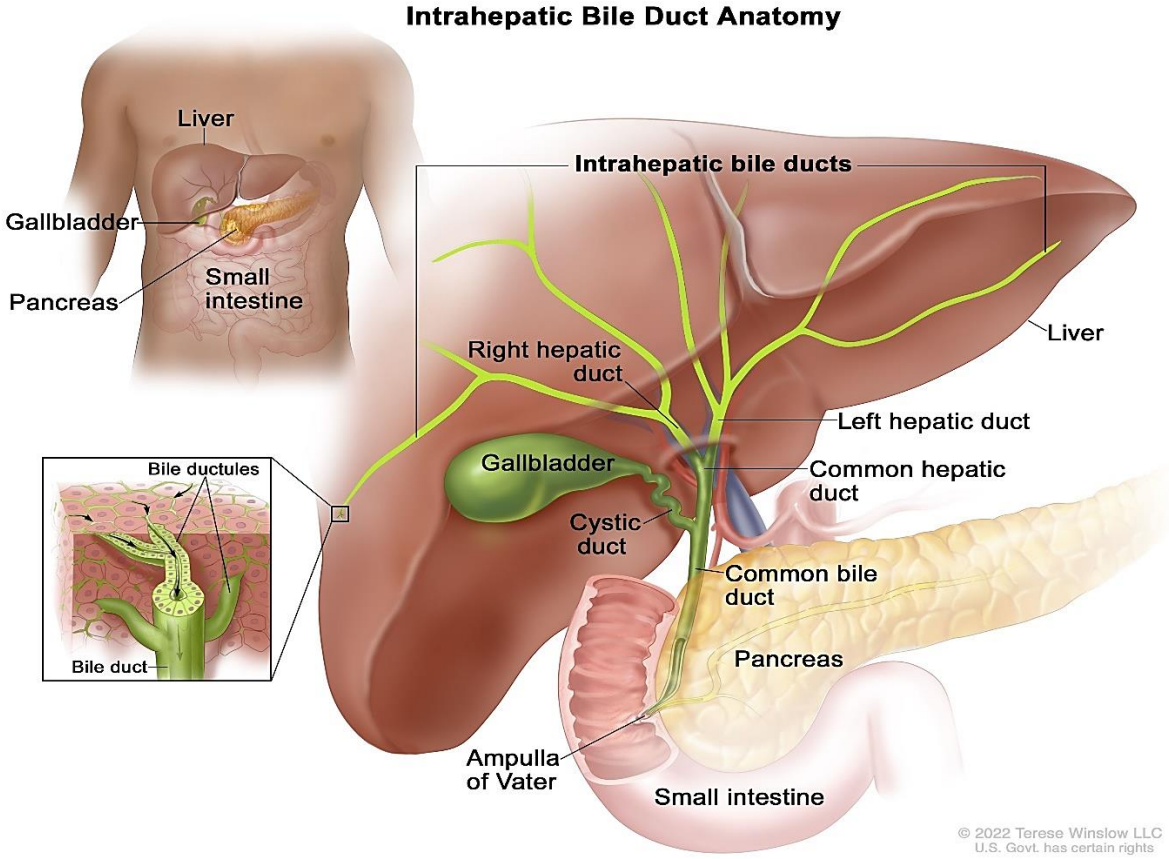
Common name: Sheep **liver fluke**

History and Distribution

F. hepatica was the **first trematode that was discovered** more than 600 years ago in 1379 by Jehan de Brie.

- It was named by Linnaeus in 1758.
- It is the **largest and most common liver fluke found in humans**, but its primary host is the sheep and to a less extent, cattle.
- It is worldwide in distribution, being found mainly in sheep-rearing areas.
- It causes the **economically-important disease**, **(liver rot)** **in sheep**.

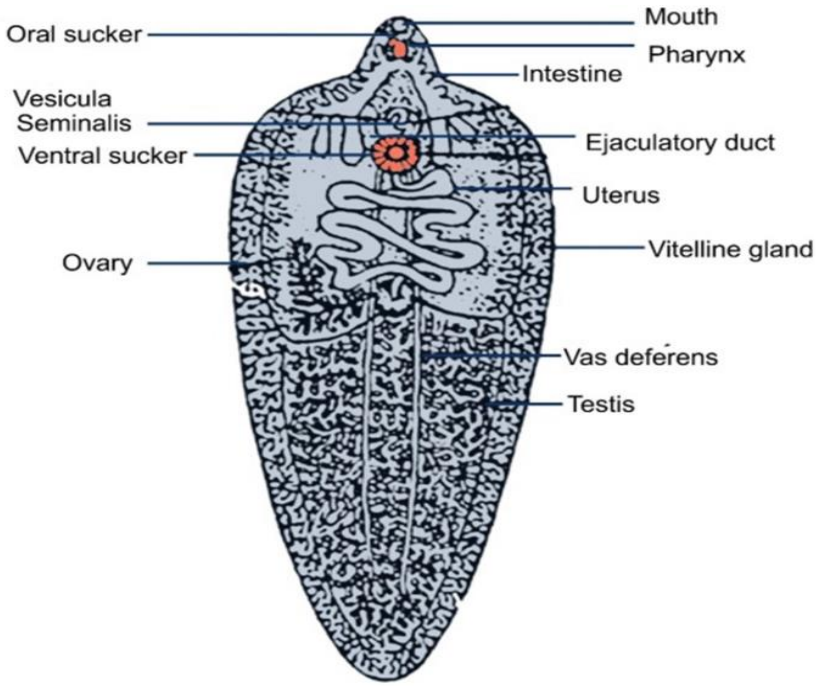
Habitat / The parasite resides in **the liver and biliary passages of the definitive host.**



Morphology

Adult Worm

- It is a **large leaf-shaped fleshy fluke**, 30 mm long and 15 mm broad, grey or brown in color.
- It has a conical projection anteriorly containing an oral sucker and is rounded posteriorly.
- The adult worm lives in the biliary tract of the definitive host for many years— about 5 years in sheep and 10 years in humans.
- Like all other trematodes, it is **hermaphrodite.**



Egg

The eggs are large, ovoid, operculated, bile-stained, and about 140 µm by 80 µm in size.

- Eggs contain an immature larva, the miracidium
- **Eggs do not float in saturated solution of common salt**
- **Eggs of *F. hepatica* and *Fasciolopsis buski* cannot be differentiated**
- Eggs are **unembryonated** when freshly passed.

Life Cycle

F. hepatica passes its **life cycle in 1 definitive host and 2 intermediate hosts.**

Definitive host: Sheep, goat, cattle, and man.

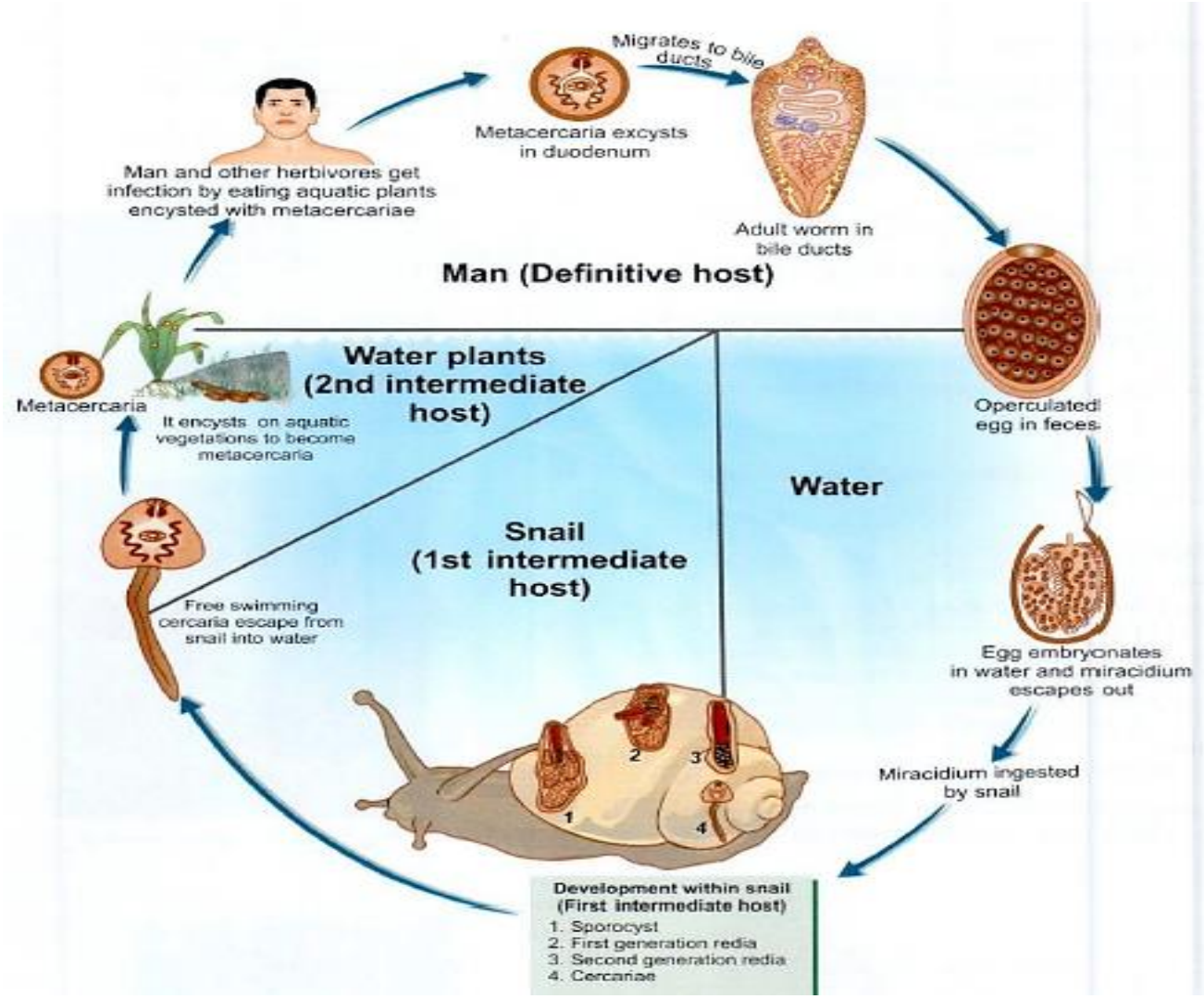
Intermediate host: Snails of the genus ***Lymnaea* and *Succinea***.

Encystment occurs on **aquatic plants**, which act as **second intermediate host**.

Mode of infection: The definitive host, sheep and man, get infection by ingestion of **metacerceriae** encysted on aquatic vegetation.

- Adult worm lives in the **biliary passage** of sheep or man. Eggs are laid in the biliary passages and are shed in feces.
- The **embryo matures in water in about 10 days** and the **miracidium** escapes. **It penetrates the tissues of first intermediate host, snails of the genus *Lymnaea.***
- **In snail**, the **miracidium** progresses through the **sporocyst** and the **first and second generation redia stages to become the cercariae** in about **1–2 months**.
- **The cercariae escape into the water and encyst on aquatic vegetation** or **blades of grass** to become **metacercariae**, which can survive for long periods.
- **Sheep, cattle, or humans** eating watercress or other water vegetation containing the metacercaria become infected.
- The **meta-cercariae** excyst in the **duodenum** of the **definitive host** and **pierce (puncture)** the gut wall to enter **the peritoneal cavity**.

They penetrate the **Glisson's capsule**, traverse the liver parenchyma, and reach the biliary passages, where they mature into the adult worms in about 3–4 months



Pathogenicity

- **Fascioliasis** differs from **Clonorchiasis** in that *F. hepatica* is larger and so **causes more mechanical damage**. In traversing the liver tissue, it causes parenchymal injury. As humans are not its primary host, it causes more severe inflammatory response. Some larvae penetrate right through the liver and diaphragm ending up in the lung.
- **In acute phase** during the migration of the larva, patients present with **fever**, **right upper quadrant pain**, **eosinophilia**, and tender **hepatomegaly**. The symptoms subside as parasites reach their final destination.

Diagnosis

Stool Microscopy

Demonstration of **eggs in feces** or **aspirated bile from duodenum** is the best method of diagnosis. Eggs of *F. hepatica* and *F. buski* are indistiguishable.

Blood Picture

It reveals **eosinophilia**.

Serodiagnosis

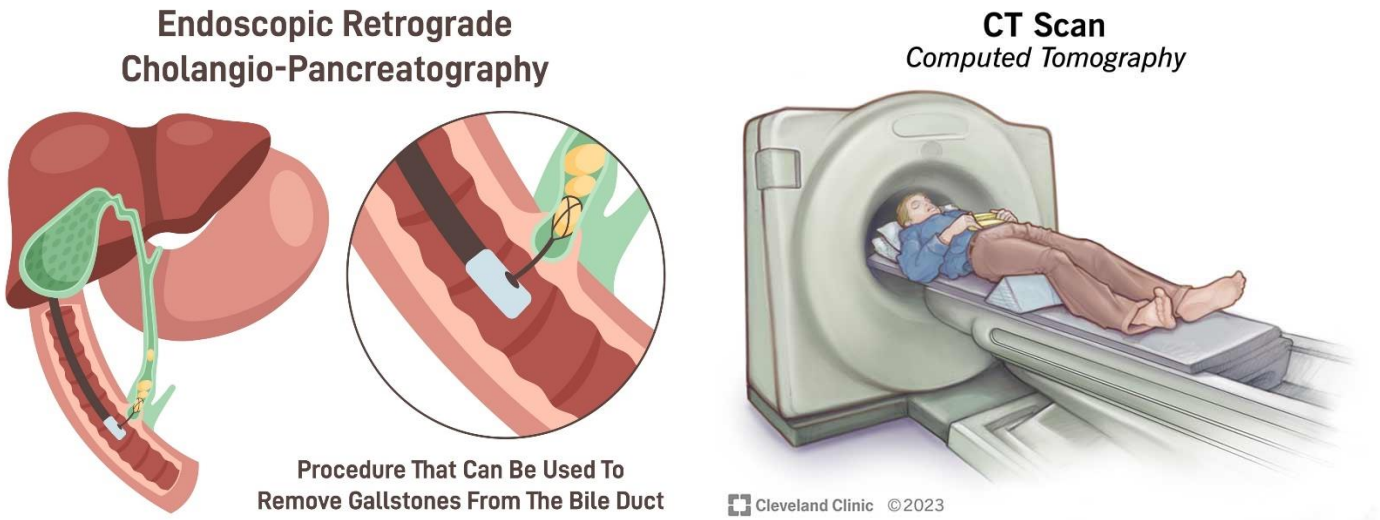
Serological tests such as **immunofluorescence**, **ELISA, immunoelectrophoresis**, and **complement fixation**.

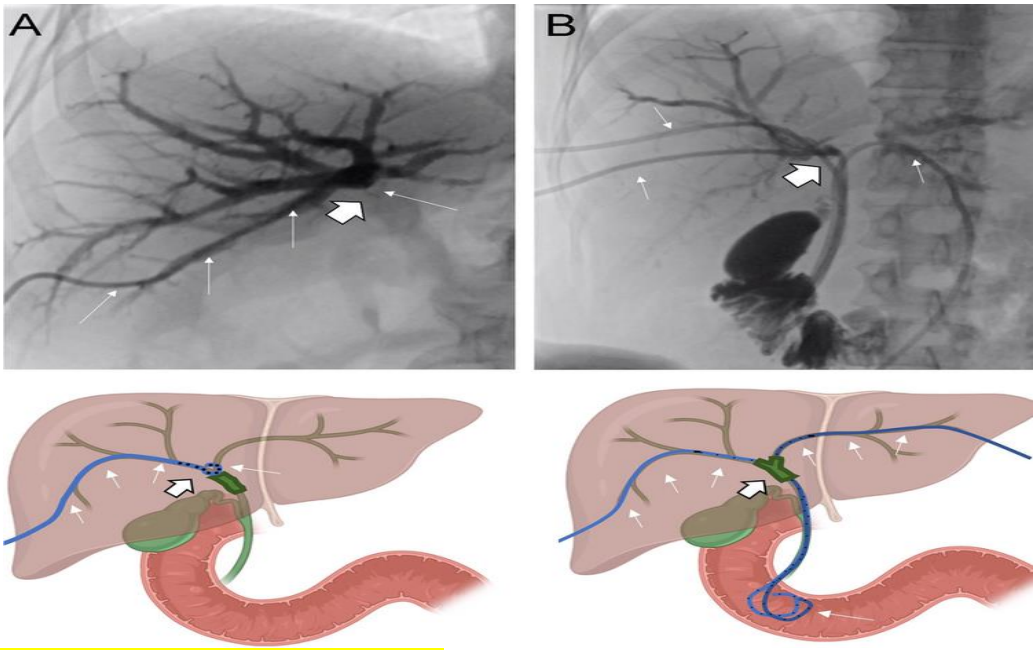
ELISA becomes positive within 2 weeks of infection and is negative after treatment.

In chronic fascioliasis, ***Fasciola* copro-antigen may be detected in stool.**

Imaging

- **Ultrasound Sonography (USG)**





Percutaneous cholangiography may be helpful in diagnosis.

Treatment

Oral **triclabendazole** (10 mg/kg once) is the treatment of choice.

- Alternative drug is **bithionol** (30–50 mg for 10–15 days)
- **Prednisolone** at a dose of 10–20 mg/kg is used to control toxemia.

Q : Cercaria larva is the infective form of

A- Ascaris
B- Echinococcus granulosus
C- Hymenolepis nana
D- Schistosoma mansoni
E- Fasciola hepatica

Q : The diagnostic stage of Fasciola hepatica is :-

A- Cercaria
B- Metacercaria
C- Eggs
D- Miracidium
E- Redia

Who discovered F.hepatica?

a) Linneus
b) Jehan de Brie
c) Aristotle
d) Charles Darwin

What is the primary host of F. hepatica?

a) Humans
b) Cattle
c) Sheep
d) Goats

Where is F. hepatica predominantly found?

a) Urban areas
b) Deserts
c) Sheep-rearing areas
d) Rainforests

How long does the adult worm of F. hepatica live in humans?

a) 30 years
b) 5 years
c) 10 years
d) 15 years

How many hosts are involved in the life cycle of F. hepatica?
a) 1 definitive host and 1 intermediate host
b) 1 definitive host and 2 intermediate hosts
c) 2 definitive hosts and 1 intermediate host
d) 2 definitive hosts and 2 intermediate hosts
Where does the embryo mature during the life cycle of F. hepatica?
a) Liver of the definitive host
b) Water
c) Aquatic plants
d) Snails
What is the mode of infection for the definitive host, such as sheep and humans?
a) Inhalation of larvae
b) Direct contact with infected feces
c) Ingestion of metacercariae encysted on aquatic vegetation
d) Through contaminated water
How do sheep, cattle, or humans become infected with F. hepatica?
a) Ingesting contaminated water
b) Direct skin contact with infected animals
c) Consuming infected snails
d) Eating watercress or other water vegetation containing metacercariae
How does Fascioliasis differ from clonorchiasis in terms of pathogenicity?
a) F. hepatica causes less mechanical damage than Clonorchis
b) F. hepatica causes more severe inflammation due to its larger size
c) Clonorchis penetrates the lung while F. hepatica doesn't
d) Clonorchis causes more eosinophilia compared to F. hepatica
What symptoms are commonly observed during the acute phase of Fascioliasis?
a) left upper quadrant pain
b) Fever and eosinophilia
c) No symptoms are observed during this phase
d) Tender hepatomegaly only

Which diagnostic method is considered the best for Fascioliasis?

a) Blood Picture
b) Serodiagnosis
c) Imaging techniques
d) Stool microscopy

When does ELISA become positive after Fascioliasis infection?

a) Immediately after infection
b) 1 week after infection
c) 2 weeks after infection
d) Rainforests

What is the treatment of choice for Fascioliasis?

a) Prednisolone
b) Bithionol
c) Triclabendazole
d) Ivermectin

Where When does ELISA become positive after Fascioliasis infection?

a) Immediately after infection
b) 1 week after infection
c) 2 weeks after infection
d) 1 month after infection

What is the alternative drug treatment mentioned for Fascioliasis?

a) Albendazole
b) Praziquantel
c) Mebendazole
d) Bithionol

What is the role of Prednisolone in the treatment of Fascioliasis

a) To directly kill the parasite
b) To prevent recurrence of infection
c) To control inflammation and toxemia
d) To boost the immune system

Please accept my sincere regards.

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