



**Medical Analysis
Department**

Intestinal and lung Trematodes

Medical Parasitology II (MA302)

Summer School

Lecture 6

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Fasciolopsis buski

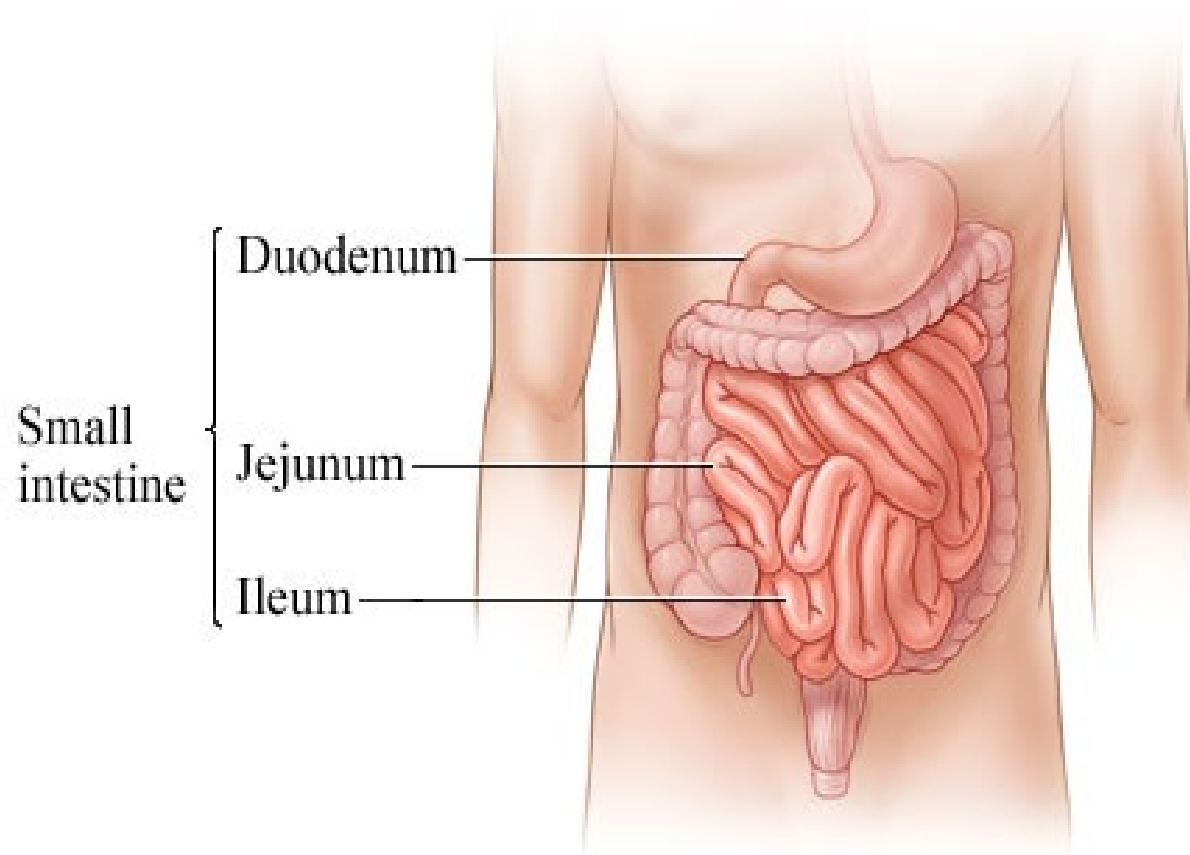
Case study

A 12-year-old boy presented with abdominal pain, diarrhea, and generalized weakness after eating raw aquatic plants. Stool examination demonstrated large operculated eggs consistent with *Fasciolopsis buski*. He was treated with praziquantel and instructed to avoid raw aquatic vegetation and improve food hygiene, leading to complete recovery.

Fasciolopsis buski (Intestinal Fluke)

Habitat

The adult worm lives in the **duodenum** or **jejunum** of pigs and man.



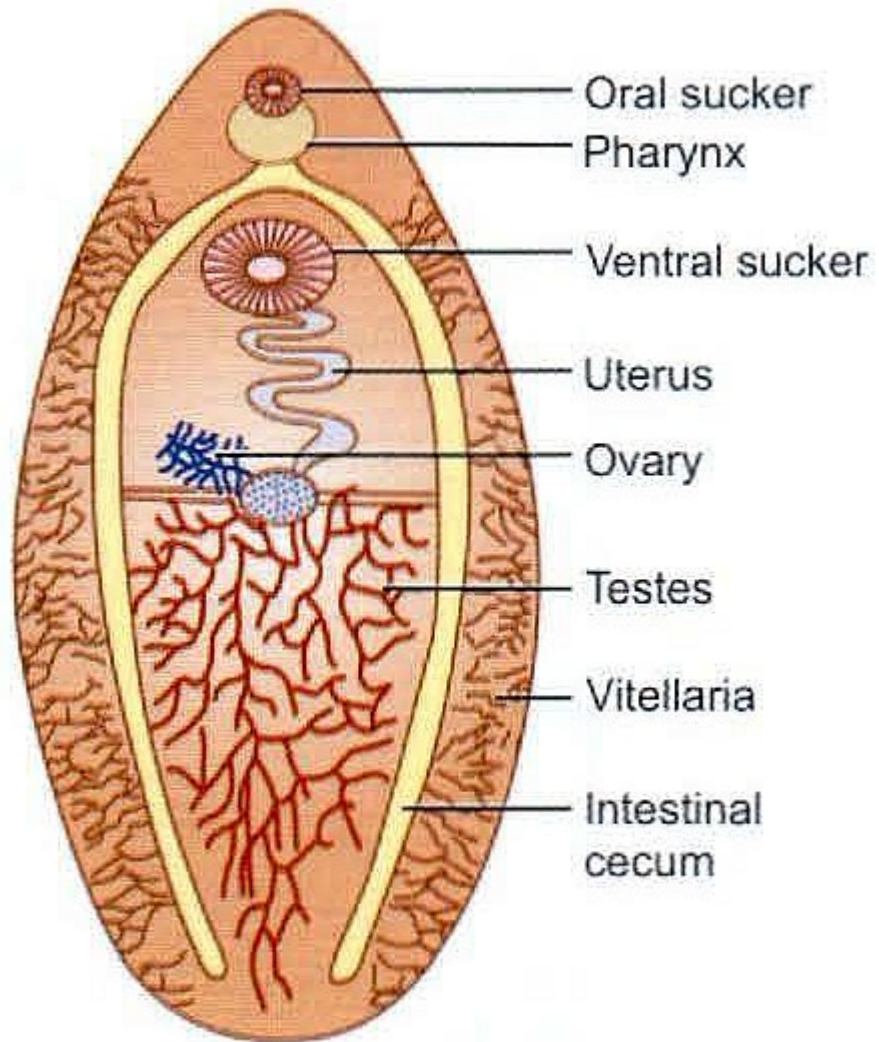
Morphology

Adult worm: The adult is a large, fleshy worm, 20-75 mm long and 8-20 mm broad, and 0.5-3 mm in thickness.

- It is elongated ovoid in shape, with a small oral sucker and a large acetabulum. It has no cephalic cone as in *F. hepatica*.
- The adult worm has a lifespan of about 6 months.
- The two intestinal caeca do not bear any branches.



Adult



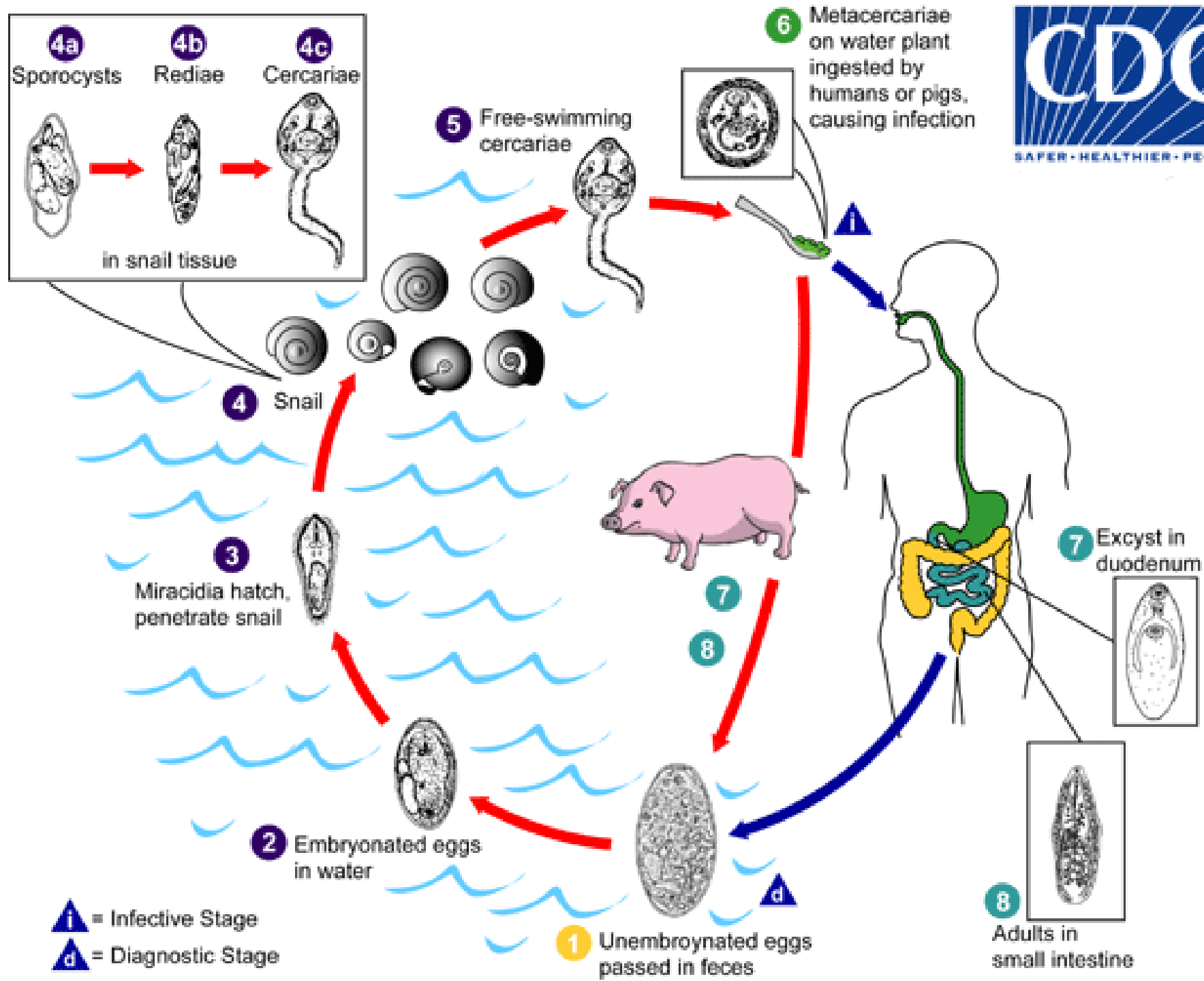
Eggs

- The operculated eggs are similar to those of *F. hepatica*.
- Eggs are laid in the lumen of the intestine in large numbers, about 25,000 per day.



Life cycle

- The cycle begins when unembryonated eggs are passed in the feces of infected humans or pigs into freshwater.
- In water, the eggs hatch and release miracidia, which actively seek and penetrate suitable freshwater snails (the first intermediate host).
- Inside the snail, the parasite undergoes development through sporocyst, redia, and cercaria stages.
- The cercariae emerge from the snail and encyst on the surface of aquatic plants, forming metacercariae, which are the infective stage.
- When humans or pigs consume raw or undercooked aquatic plants carrying metacercariae, infection occurs.
- The ingested metacercariae excyst in the duodenum and attach to the intestinal wall, where they mature into adult worms that produce eggs, continuing the cycle.



Pathogenesis

The pathogenesis of fasciolopsiasis is due to traumatic, mechanical, and toxic effects.

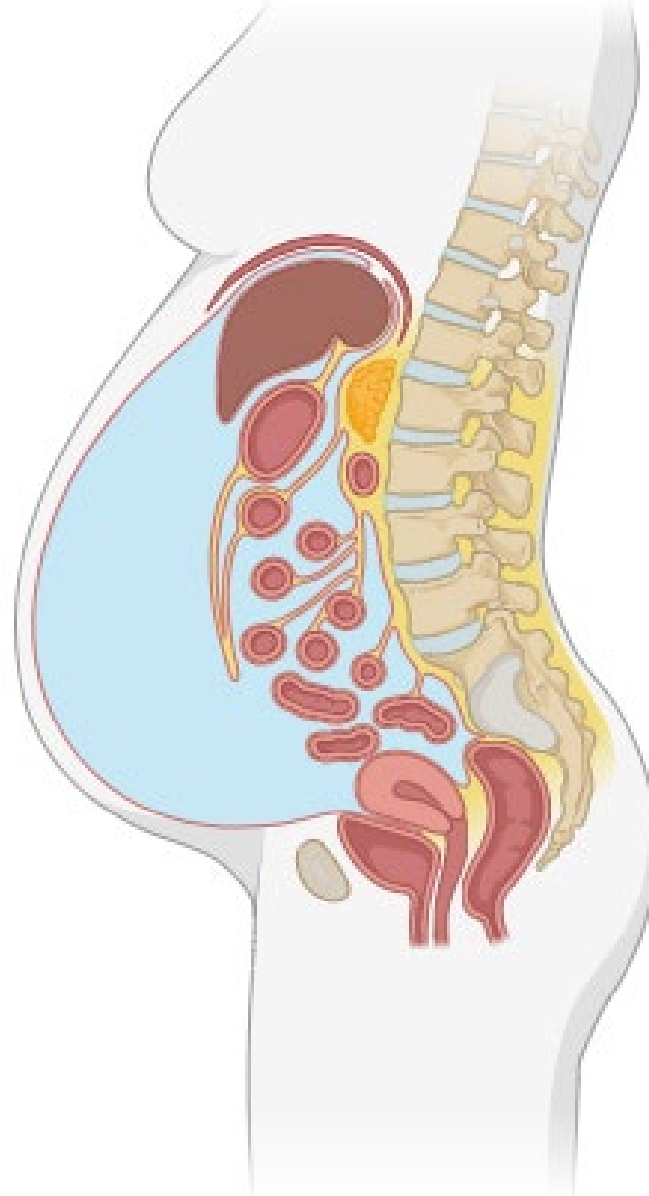
Larvae that attach to the duodenal and jejunal Mucosa cause inflammation and local ulceration. Intoxication and sensitization also account for clinical illness.

In heavy infections, the adult worms cause partial obstruction of the bowel, malabsorption, protein-losing enteropathy, and impaired vitamin B12 absorption.

The initial symptoms are diarrhea and abdominal pain.

Toxic and allergic symptoms usually appear as edema, ascites, anemia, and persistent diarrhea.

Ascitis



Laboratory Diagnosis

History of residence in endemic areas suggests the diagnosis, which is confirmed by the demonstration of the egg in feces or of the worms after administration of a purgative or anthelmintic drug.



Treatment

Drug of choice is **praziquantel**.

Paragonimus Westermani

Case study

A 32-year-old man presented with chronic cough, chest pain, and blood-stained sputum after eating undercooked freshwater crabs. Sputum examination revealed operculated eggs of *Paragonimus westermani*. He was treated with praziquantel and advised to consume only thoroughly cooked crustaceans, resulting in complete recovery.

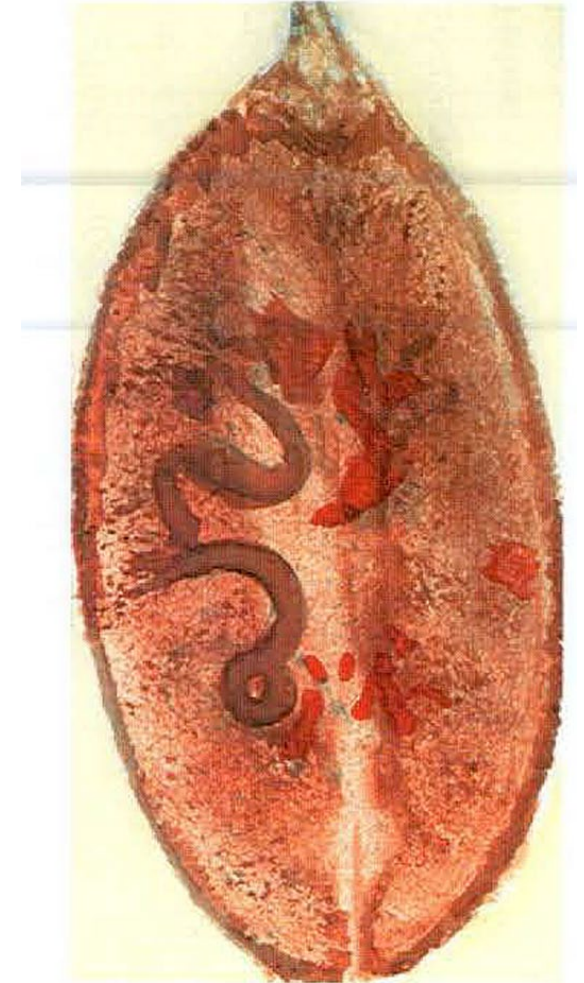
Distribution

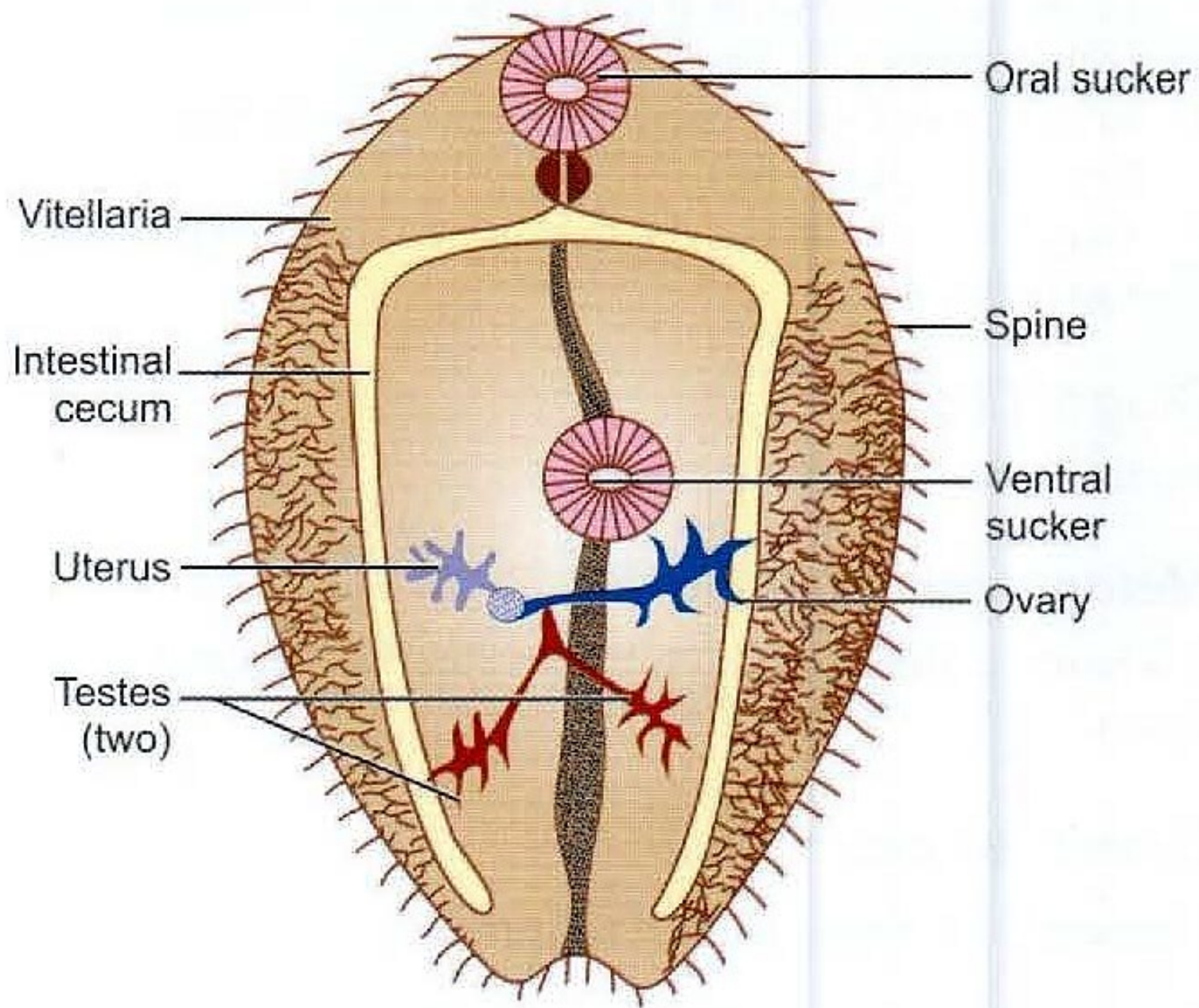
The parasite is endemic in the Far East-Japan, Korea, Taiwan, China and South East Asia- Sri Lanka and India.



Morphology

- Adult worm: The adult worm is egg-shaped, about 10 mm long, 5 mm broad and 4 mm thick and reddish-brown in color.
- The integument is covered with scale-like spines. has an oral sucker placed anteriorly and a ventral sucker located towards the middle of the body.
- It has two unbranched intestinal caeca, which end blindly in the caudal area.
- They have a lifespan of up to 20 years in humans.





Egg:

The eggs are operculated, golden-brown in color and about 100µm by 50µm in size.

- They are unembryonated when freshly laid.

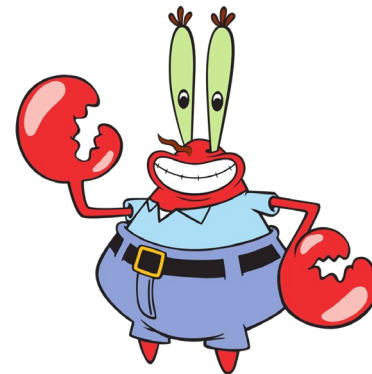
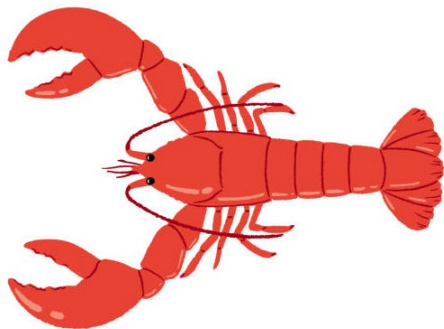


Life Cycle

Definitive host: Man. Besides humans, crab-eating mammals.

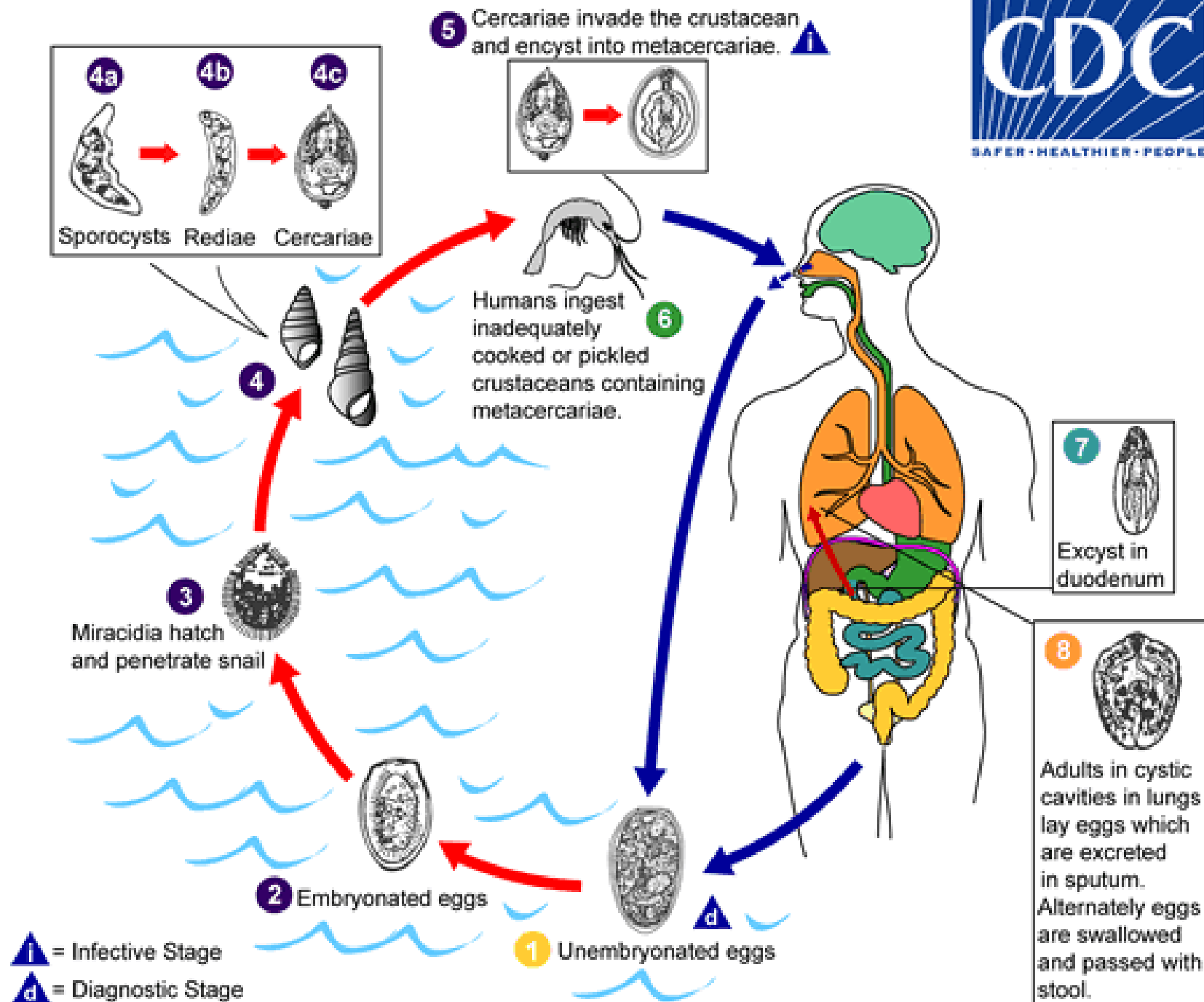
First intermediate host: Freshwater snail, belonging to the genera *Semisulcospira* and *Brotia*.

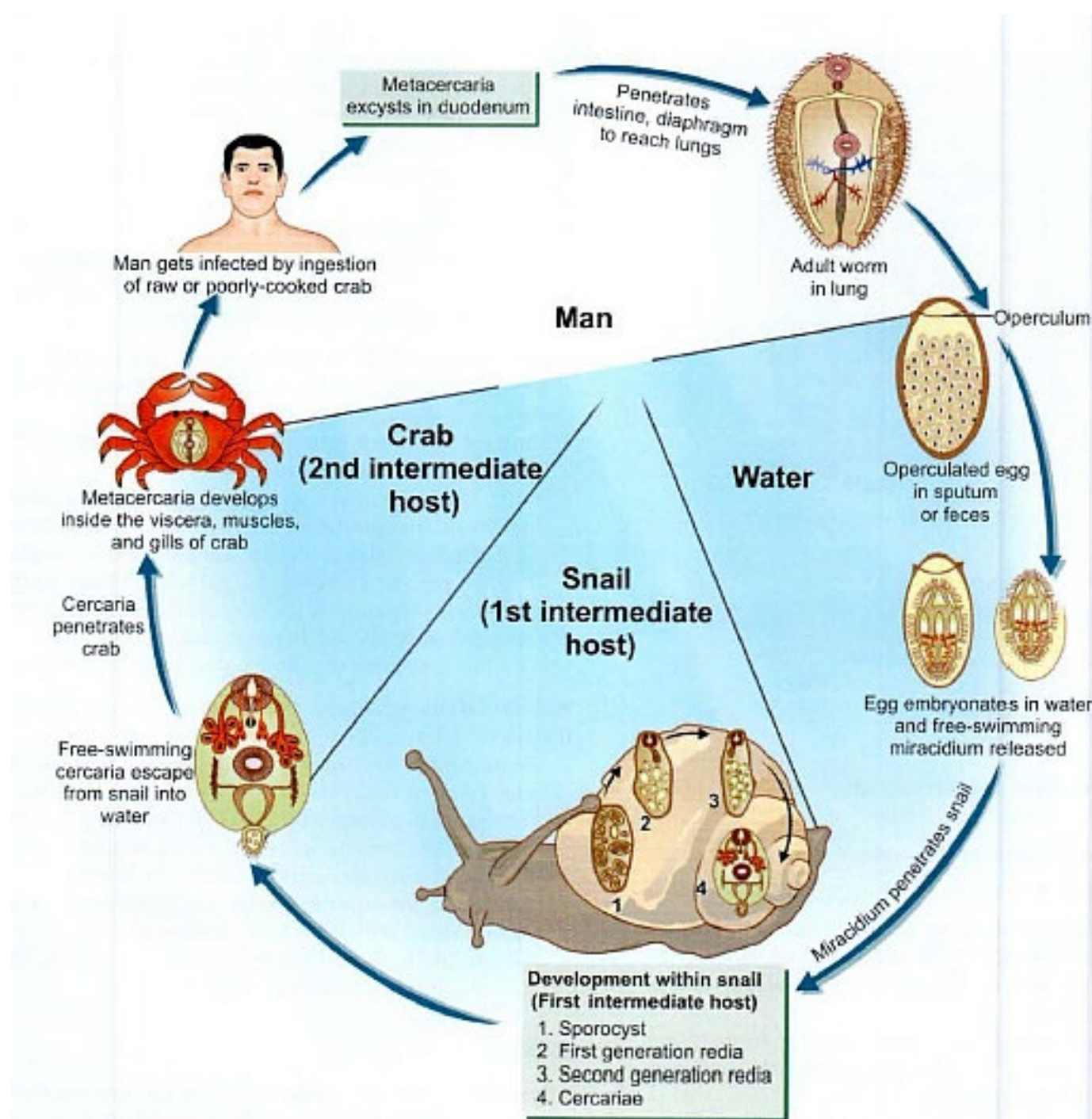
Second intermediate host: Freshwater crab or crayfish.



Life cycle

- Eggs are passed in human sputum (or swallowed and passed in feces) into freshwater.
- Miracidia hatch from eggs and infect freshwater snails (first intermediate host), developing into sporocysts → rediae → cercariae.
- Cercariae leave the snail and encyst as metacercariae in crabs or crayfish (second intermediate host).
- Humans become infected by eating raw or undercooked crabs/crayfish containing metacercariae.
- Metacercariae excyst in the duodenum, penetrate the intestinal wall, migrate through the peritoneum, diaphragm, and pleural cavity to reach the lungs, where they mature into adult flukes.





Pathogenicity and Clinical Features

Pulmonary

Adult worms form cysts in the lungs, often communicating with bronchi. Inflammation leads to granulomas, abscesses, pneumonitis, and eosinophilia. Patients may have cough, chest pain, and hemoptysis; sputum contains golden-brown eggs. Chronic cases can mimic tuberculosis.

Pathogenicity and Clinical Features

Extrapulmonary

It is rare in *Paragonimus westermani*.

- **Abdominal:** Migration to the liver or intestinal wall may cause hepatomegaly, tenderness, and bloody diarrhea.
- **Cerebral:** Cysts in the brain or spinal cord cause headache, fever, paralysis, visual disturbances, and seizures.

Laboratory Diagnosis

Microscopy: Demonstration of the eggs in sputum or feces provides definitive evidence. Sputum examination should be repeated for 7 consecutive days.

Serology: *ELISA*, antigen or antibody

Imaging: Chest X-ray reveals abnormal shadows (nodular, cystic, ring infiltrative) in the middle and lower lung field.



Treatment

Praziquantel (25 mg/ kg TDS for 1-2 days) is the drug of choice.

References

- Paniker, C. K. J. & Ghosh, S. 2021. *Paniker's textbook of medical parasitology*, New Delhi, Jaypee Brothers Medical Publishers.