Lecture 8

Trematodes (fluks)

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introduction

Trematodes are unsegmented helminthes which are flat and broad resembling the leaf of a tree or flat fish

The sexes are separate in the schistosomes, while the other flukes are hermaphroditic.

1-Blood flukes (sexes separate, infection by cercarial penetration Ex *Schistosoma spp.*

2- Hermaphroditic fl ukes (bisexual, infection by ingestion of cercariae) Ex Fasciola Hebatica

Schistosoma spp.

1 -*Schistosoma mansoni*

2 - Schistosoma japonicum

3 - *Schistosoma haematobium*

Schstosoma species : Typical characteristics

Table (1) : Schstosoma species : Typical characteristics						
Characteristics	Schistosoma japonicum		Schistosoma mansoni		Schistosoma haematobium	
	Male	Female	Male	Female	Male	Female
Size range	12 – 20 mm by 0.5 mm	15 – 30 mm by 0.1-0.3 mm	6.4-9.9mm	7.2-14mm	10-15 mm by 1 mm	20 mm by 0.25 mm
Testes	7 Large		6-9 Grapelike cluster		4 -5 Subglobese	
Eggs size range	50 to 85 µm by 38 to 60 µm		112 to 182 µm by 40 to 75 µm		110 to 170 µm by 38 to 70 µm	
Egg contents	Developed miracidium		Developed miracidium		Developed miracidium	
Appearance & location of spine	Small : Lateral		Large : Lateral		Large : Terminal	

Fig(1) *Schistosoma mansoni* egg .

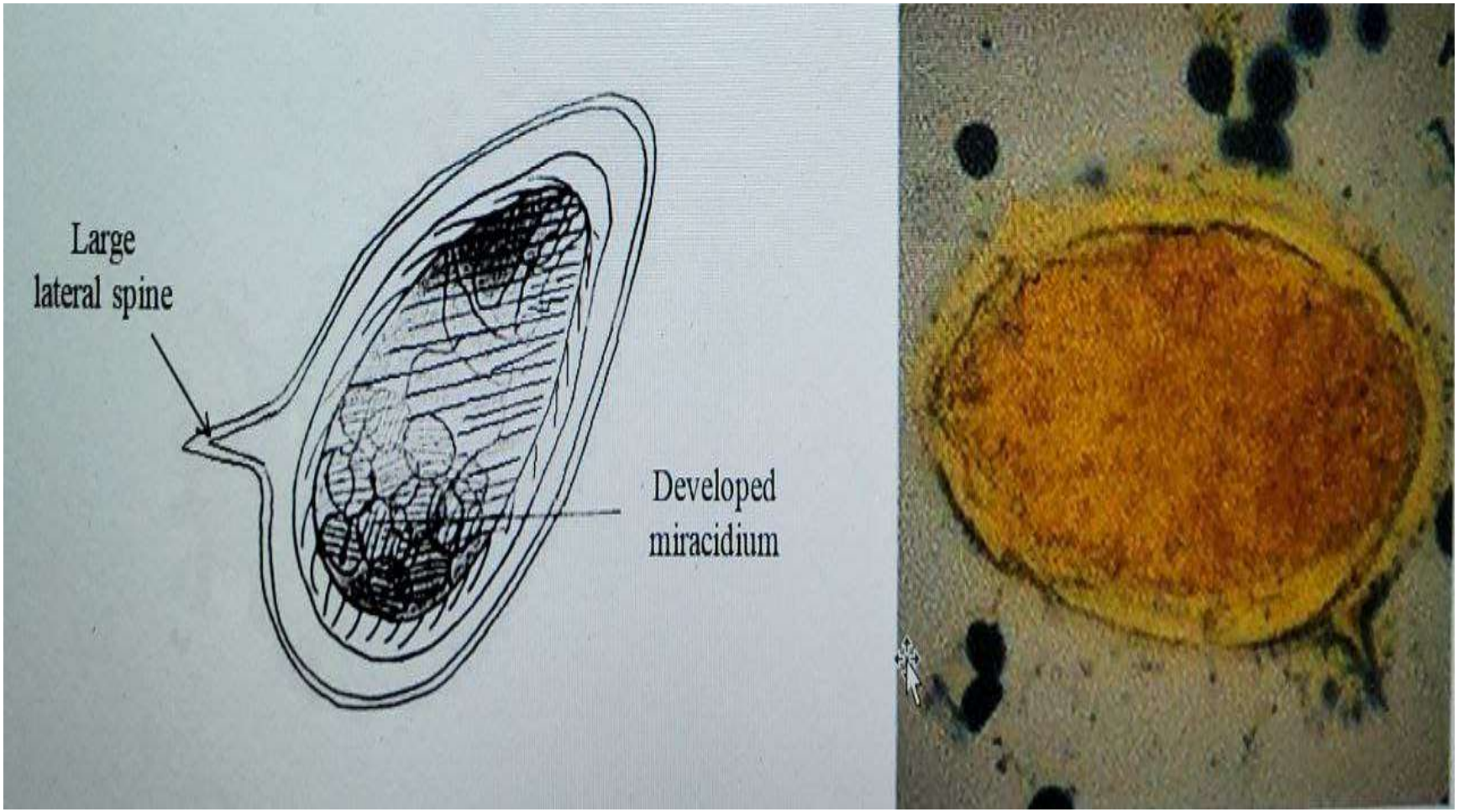
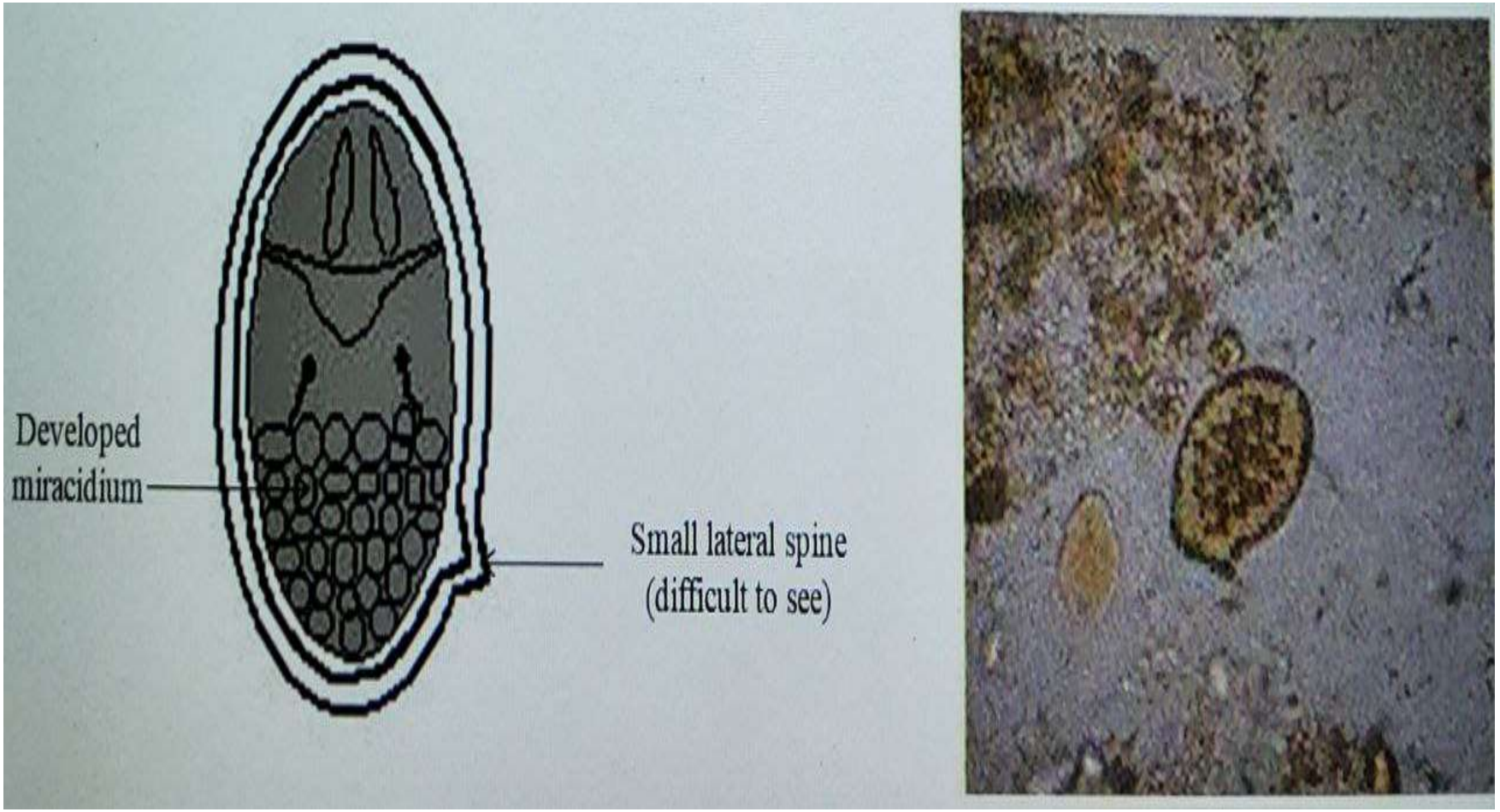
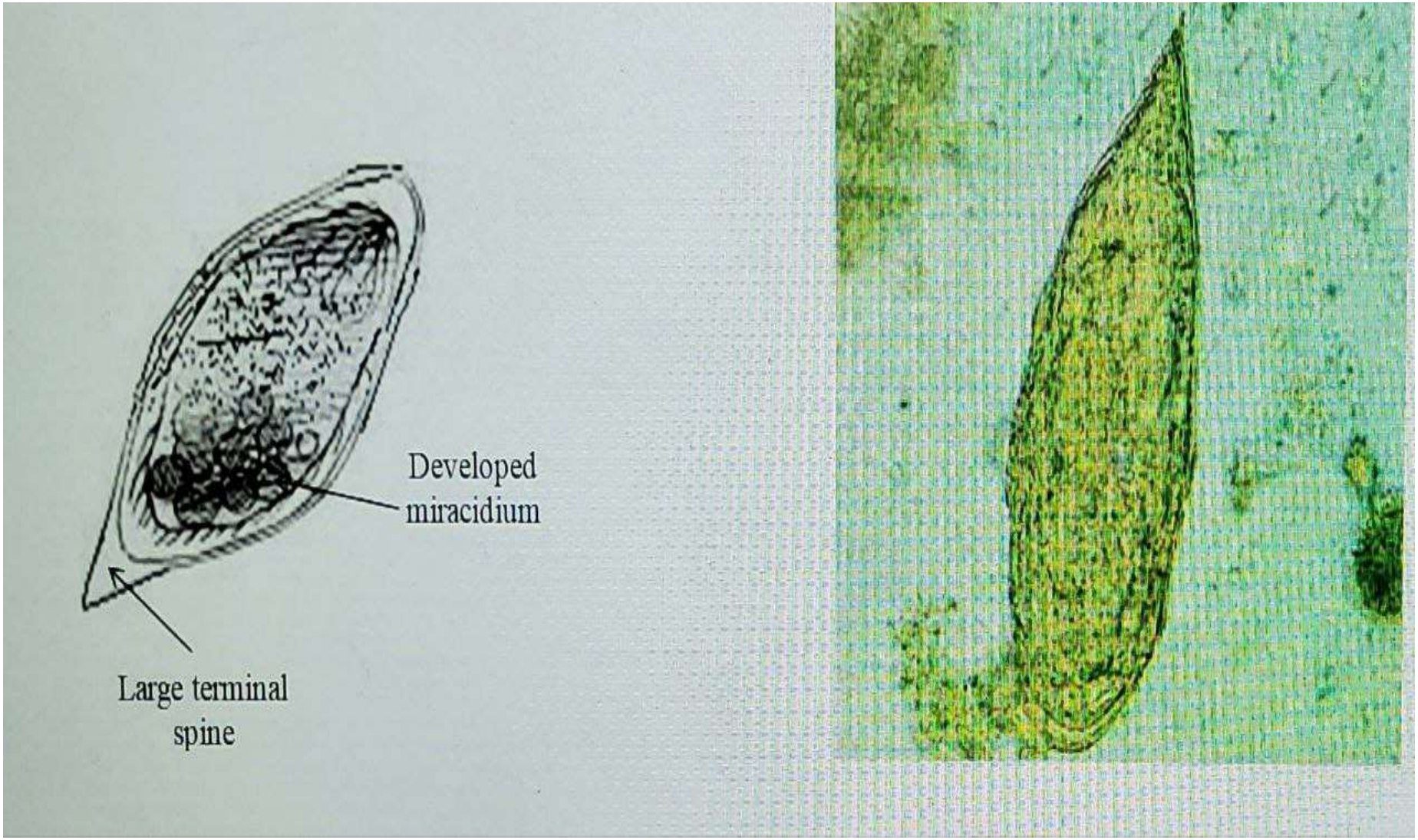


Fig (2) *Schistosoma japonicum* egg .



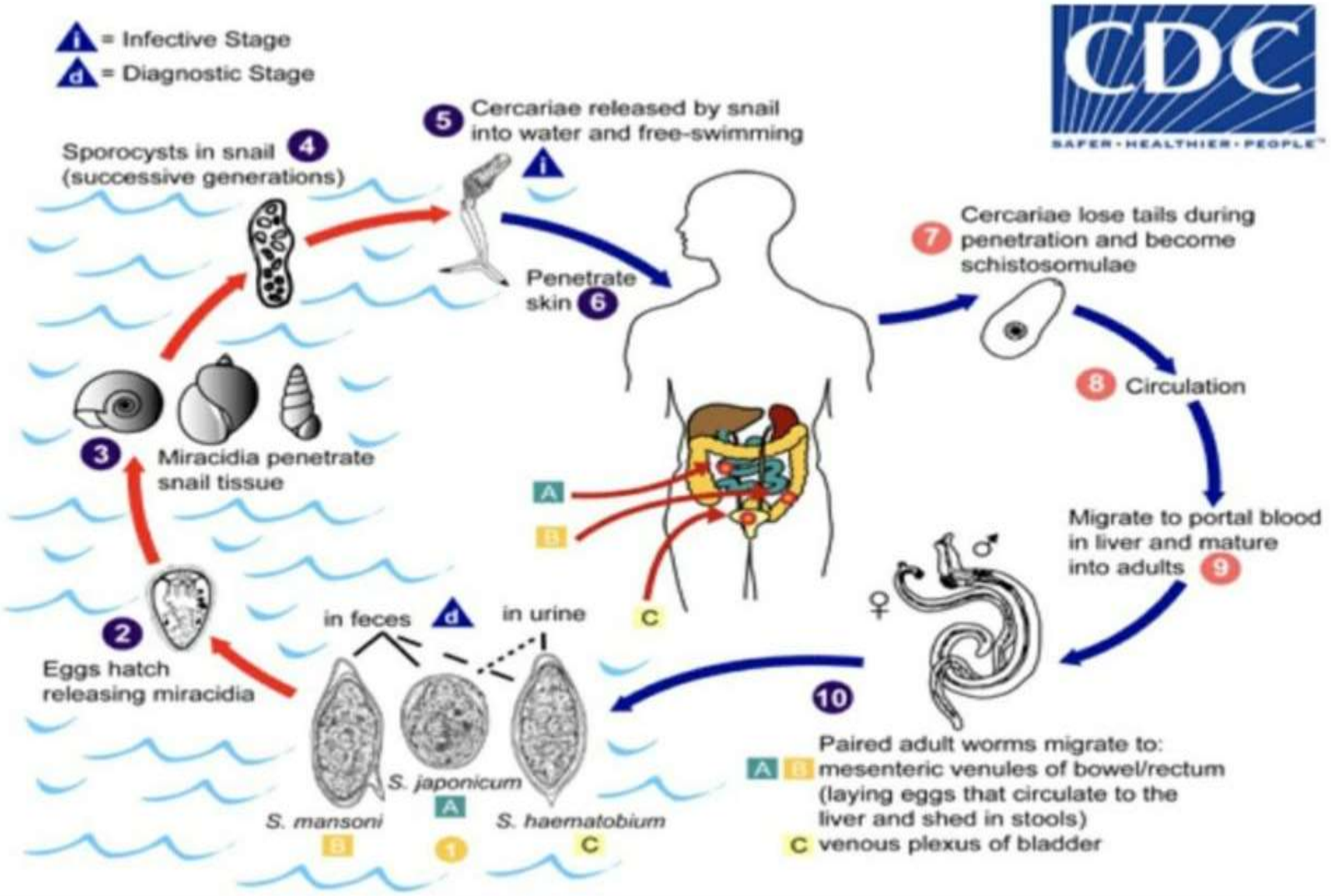
Fig(3) *Schistosoma haematobium* egg .



Life cycle

- Fully embryonated viable eggs in feces soon hatch on contact with fresh water into a miracidum , the miracidia then attach to and enter the tissues of specific species of snails which serve as the intermediate host, where the development of a sporocyst occurs and produce many cercariae
- cercariae release from the snail to the water ,on contact with human skin the cercariae become attached and then penetrate the cutaneous capillaries and begin their blood migration to mesenteric vessels.

Fig (4) *Schistosoma* spp. Life cycle



Clinical symptoms

- **Schistosomiasis / Bilhariziasis / Swamp fever.** The first symptom experienced by most symptomatic persons infected with *Schistosoma* is inflammation at the cercariae penetration site. Symptoms of acute infection include abdominal pain, fever, and chills, weight loss, cough, bloody diarrhea, and esinophilia. Painful urination may also occur, particularly in persons infected with *S. haematobium*. The development of necrosis, lesions, and granulomas is common and occurs in the area(s) infected with the parasite. Obstruction of the bowel or uterers, as well as secondary bacterial infection and involvement of the central nervous system and other tissues, may also result.

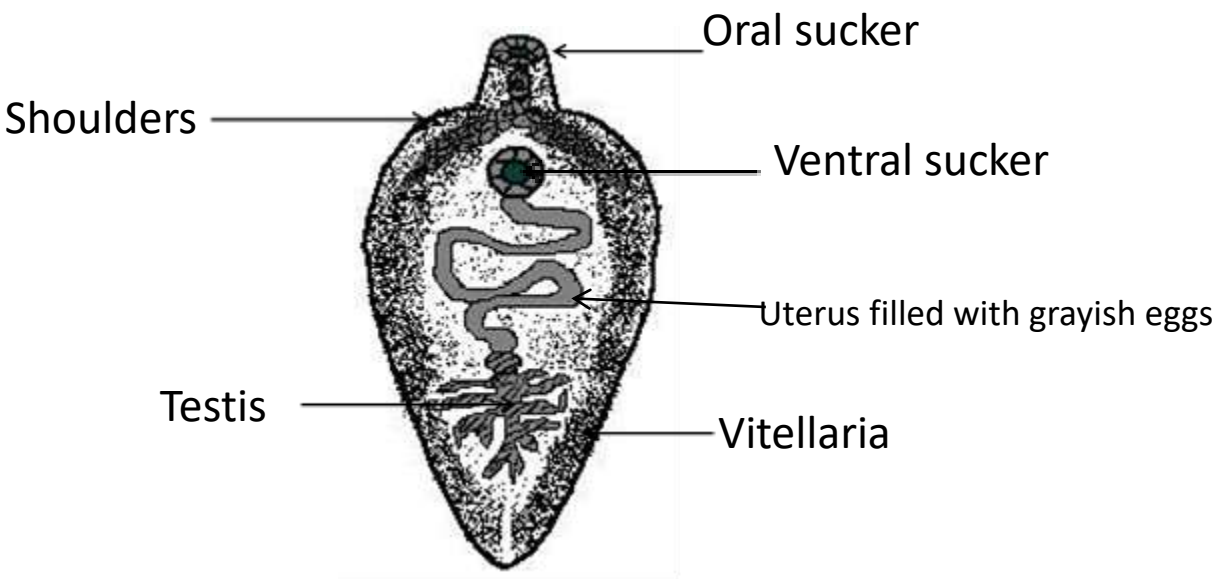
Laboratory diagnosis

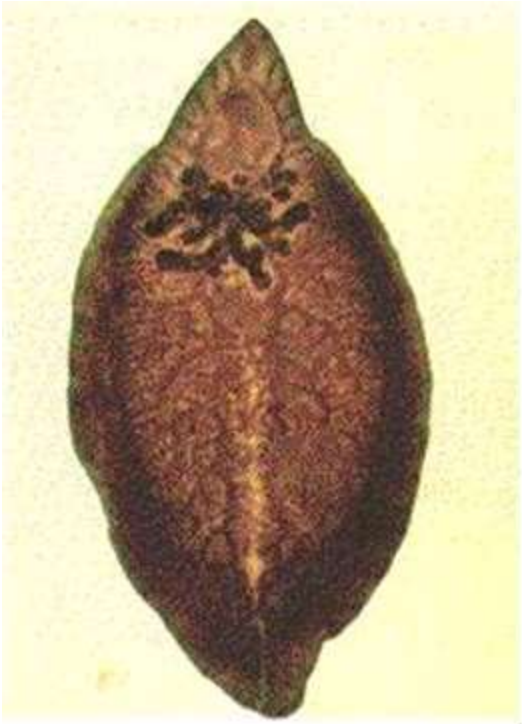
- Laboratory diagnosis of *Schistosoma mansoni and Schistosoma japonicum* is accomplished by recovery of the eggs in stool or rectal biopsy specimens. The specimen of choice for the recovery of *S. haematobium* eggs is concentrated urine specimens. In addition, a number of immunodiagnostic techniques, including ELISA, are also available.

Fasciola hepatica

- The adult *Fasciola hepatica* worm is flattened, leaf like shape, equipped with shoulders, somewhat oblong.
- Adult *Fasciola hepatica* measuring 3cm by 1cm in size, grayish in color. There are two suckers, oral sucker and ventral sucker, they located in cephalic zone.
- The intestine is branched, there are many branched testis, vitellaria situated in body laterals and the posterior end. The uterus is short and coiled filled with grayish eggs.

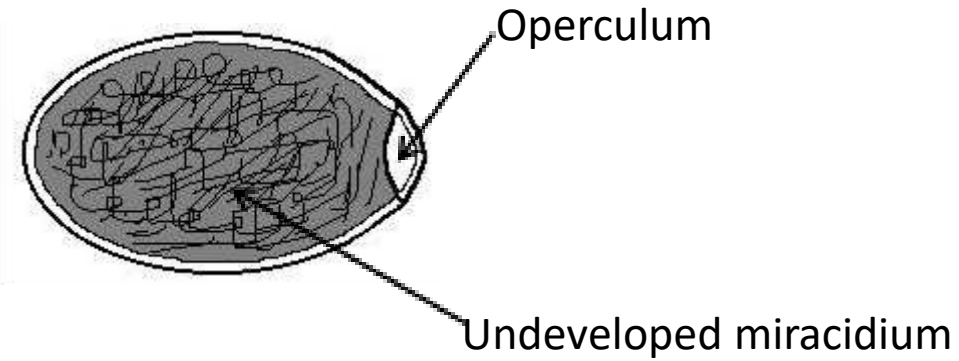
Fig(1) *Fasciola hepatica* Adult worm





Eggs

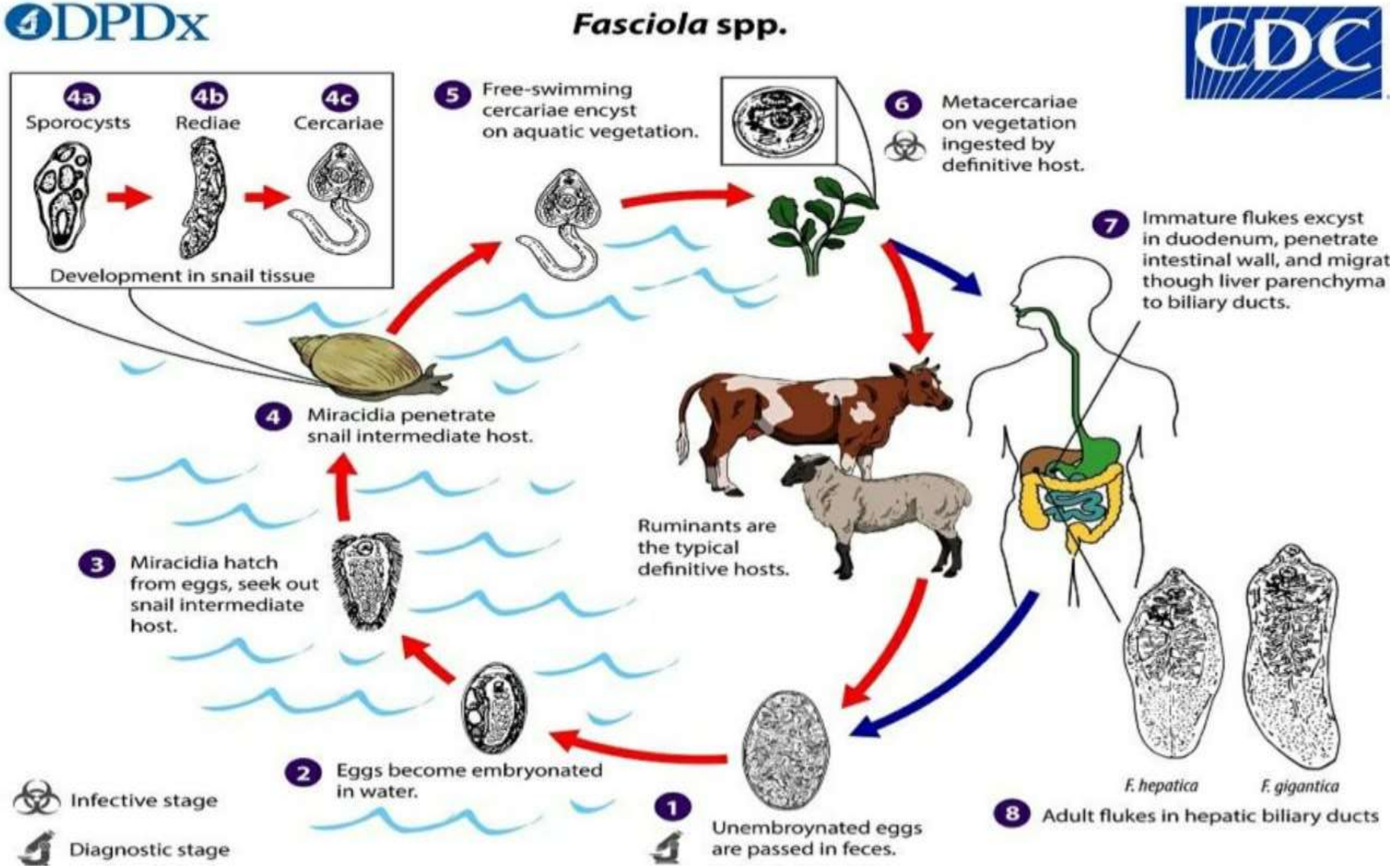
- The *Fasciola hepatica* egg measures 128 to 150 μm by 60 to 90 μm. The eggs are identical in all other respects. The egg consists of an oblong undeveloped miracidium equipped with a distinct operculum.



Life cycle

- The self – fertilization of adult worm resulting eggs exit the host via the feces. upon contact with fresh water , the miracidium emerges from each egg .. The miracidium penterates the Specific species of snails which serve as the intermediate host, where the development of a sporocyst occurs numerous rediae result and ultimately produce many cercariae. The cercariae emerge from the snail and encyst on water plants. Human consumption of such contaminated plants initiates a new cycle.

Fasciola hepatica Life cycle



Clinical symptoms

- **Fascioliasis**, an infection with a liver fluke *(Fasciola hepatica)*, it is marked by stomach and bowel pain, fever, a liver disease (jaundice), hives, and diarrhea. One gets it by swallowing forms of the fluke found on water plants, as raw watercress.

Laboratory diagnosis

- The specimen choice for recovery of the eggs of *F. hepatica* is stool. Because the eggs are indistinguishable, information regarding patient symptoms and travel history is necessary to diagnose the causative species. Other method available for the detection of *F. hepatica* is ELISA test.