



Kingdom – Animalia

Phylum - Platyhelminths

Class – Trematoda

### **Species includes**

- a) *Schistosoma mansoni* (Intestinal fluke)
- b) *Schistosoma haematobium* (Bladder fluke)
- c) *Paragonimus westermani* (Lung fluke)
- d) *Clonochis sinensi* (Liver fluke)
- e) *Fasciola hepatica* (Liver fluke)
- f) *Fasciolopsi buski* (Intestine)
- g) *Dicrocoelium dendriticum* (lancet liver fluke)

### **General characteristics of Trematodes**

- 1. They are dorso-ventrally flattened
- 2. Have leaf like in shape
- 3. Their bodies are covered with tegument (protective skin) armed with scale like spines.
- 4. They have two suckers: one oral and one ventral
- 5. Unsegmented

6. have an incomplete digestive tract

### **Morphology and habitat**

Unlike other flukes, the adult schistosomes have the separate sexes with the female residing inside the gynecophoral canal within the male.

Male worms are robust and tuberculate measuring about 6-12 mm in length while females measure 7-17 mm in length and slender.

Adult worms live in the blood vessels where the females release eggs. Some of the eggs are passed out of the body in the faeces or urine to continue the parasitic lifecycle`

### **Geographical distribution**

*Schistosoma mansoni* is found primarily across sub-Saharan Africa and in South American, Brazil, Venezuela, Caribbean, Arabian Peninsula, Africa and Middle East`

### **Mode of transmission:**

Man become infected by *Schistosoma mansoni* through penetration of the foot skin by larval cercaria from the *Biomphalaria* snails or *Bulinus* snail in case of *Haematobium*.

### **Life cycle**

Eggs are 'assed out with stool or urine which hatch and release larval miracidia under optimal temperature. The miracidium then swim in water to identify the right intermediate host (*Biomphalaria* in case of *mansoni* or *Bulinus* in case of *haematobium* and penetrate the skin.

Inside the snail, the larval miracidium undergo two developmetal stages of 1<sup>st</sup> sporocysts and 2<sup>nd</sup> sporocyst before maturing into active infective larval cercariae which is then released by snails into water.

Upon release from the snail, the infective cercariae swim in water, identify its definitive host (man) penetrate the skin of the foot as they shed off their forked tail to become schistosomulae

Once in the subcutaneous tissue, the schistosomulae enter the portal circulation system and migrate through the heart, liver, spleen and other several messenteric tissues.

Adult worms reside in the superior mesenteric veins of the colon of man and in the superior mesenteric veins of the small intestine in case of *S. japonicum* or superior mesenteric veins of the bladder in case of *aematobium*.

Within the colon, bladder or small intestine, the gravid female release eggs which are moved progressively towards the lumen of the intestine or bladder or ureters from where they are passed out with stool or urine. Once in the soil, the eggs are swept into water from where they hatch once agin to repeat the cycle.

## **Pathogenesis**

Parasite eggs lodged in the intestines and **liver** may cause Intestinal schistosomiasis characterized by occult gastrointestinal bleeding and Hepatosplenic schistosomiasis.

Katayama fever, hepatic perisinusoidal egg granulomas, periportal fibrosis, portal hypertension, and occasional embolic egg granulomas in brain or spinal cord.

As for *S. haematobium* schistosomiasis, the pathology may include hematuria, scarring, calcification, squamous cell carcinoma, and occasional embolic egg granulomas in brain or spinal cord

## **Diagnosis.**

1. Examination of stool and/or urine for ova is the primary method of diagnosis for suspected schistosome infections
2. Detection of *S. mansoni* DNA in blood or serum using PCR
3. Kato-Katz test

## **Treatment**

1. Infections with all major *Schistosoma* species can be treated with praziquantel
2. Anthelmintics.
3. Oxamniquine.

## **Prevention and control**

1. Avoid swimming or wading in freshwater when you are in countries in which schistosomiasis occurs
2. Mass deworming
3. Improved better sanitation and hygiene.
4. Public health education on sanitation,