Schistosomiasis (Bilharziasis)

Session objectives

1. Definition
2. Signs and symptoms
3. Complications
4. Agents
5. Diagnosis
6. Epidemiology (Occurrence, Reservoir, Transmission, incubation period, Communicability, Susceptibility and resistance)
7. Methods of control(Preventive measures ,Control & Epidemic measures)

Schistosomiasis (also known as bilharzia, bilharziosis or snail fever) is a parasitic disease caused by several species of trematodes (platyhelminth infection, or "flukes"), a parasitic worm of the genus Schistosoma.

Schistosomiasis (Bilharziasis)

- A blood fluke (trematode) infection with adult male and female worms living within mesenteric or vesicle veins of the host over a life span of many years.
- Above all, schistosomiasis is a chronic disease. Many infections are subclinically symptomatic, with mild anemia and malnutrition being common in endemic areas. Continuing infection may cause granulomatous reactions and fibrosis in the affected organs, every organ of the body may be affected.
- Symptoms are related to the number and location of eggs in human host:-

I. Schistosoma haematobium → urinary manifestation (dysuria ,urinary frequency and haematuria at the end of micturition.

II. Schistosoma mansoni, japonicum, mekongi and intercalatum → hepatic and intestinal signs and symptoms (diarrhea, abdominal pain, and hepato spleno megally).

***Complications of chronic infection:**

I. Obstructive uro pathy ,UTI ,infertility and carcinoma of bladder .

II. Liver fibrosis ,portal hypertension with its sequelae, and colorectal carcinoma.

Acute schistosomiasis (Katayama’s fever) may occur weeks after the initial infection, especially by S. mansoni and S. japonicum. Manifestations include:Abdominal pain, Cough, Diarrhea, Eosinophilia — extremely high eosinophil granulocyte (white blood cell) count. Fever, Fatigue ,Hepatosplenomegaly & Skin symptom.

Species of Schistosoma that can infect humans:

- Schistosoma mansoni and Schistosoma intercalatum cause intestinal schistosomiasis
- Schistosoma haematobium causes urinary schistosomiasis
- Schistosoma japonicum and Schistosoma mekongi (cause Asian intestinal schistosomiasis).
- Schistosoma malayensis occasionally infect human.

Diagnosis:-

1.Demonstration of eggs in urine or stool.

2.Immunologic tests which indicate prior infection but not prove a current one.

3.Tissue biopsy

Occurrence : The disease affects many people in developing countries, particularly children.

The disease is found in tropical countries in Africa, the Caribbean, eastern South America, Southeast Asia and in the Middle East. Schistosoma mansoni is found in parts of South America and the Caribbean, Africa, and the Middle East; S. haematobium in Africa and the Middle East; and S. japonicum in the Far East. S. mekongi and S. intercalatum are found locally in Southeast Asia and central West Africa, respectively.

Reservoir:

Snails are the natural reservoir of the disease.

1.Human is the principal reservoir for Schistosoma haematobium, intercalatum and mansoni.

2.People ,dogs , cats , pigs , cattle ,water ,buffalo , horses and wild rodents are potential reservoirs for Schistosoma japanocum.

Note :-

It is important that appropriate snail presence ;as intermediate host. **eggs**, which, escaping through the stools or the urine, reach the water and liberate the **Miracidium**, this form swims freely in all directions seeking a specific snail, which it must find within eight hours or it will die

Snail species are :-

1.Biomphalaria for Schistosoma manosni.

2.Bulinus for Schistosoma haematobium and intercalatum.

3.Oncomelania for Schistosoma japanocum.

4.Neotricula for Schistosoma mekongi.

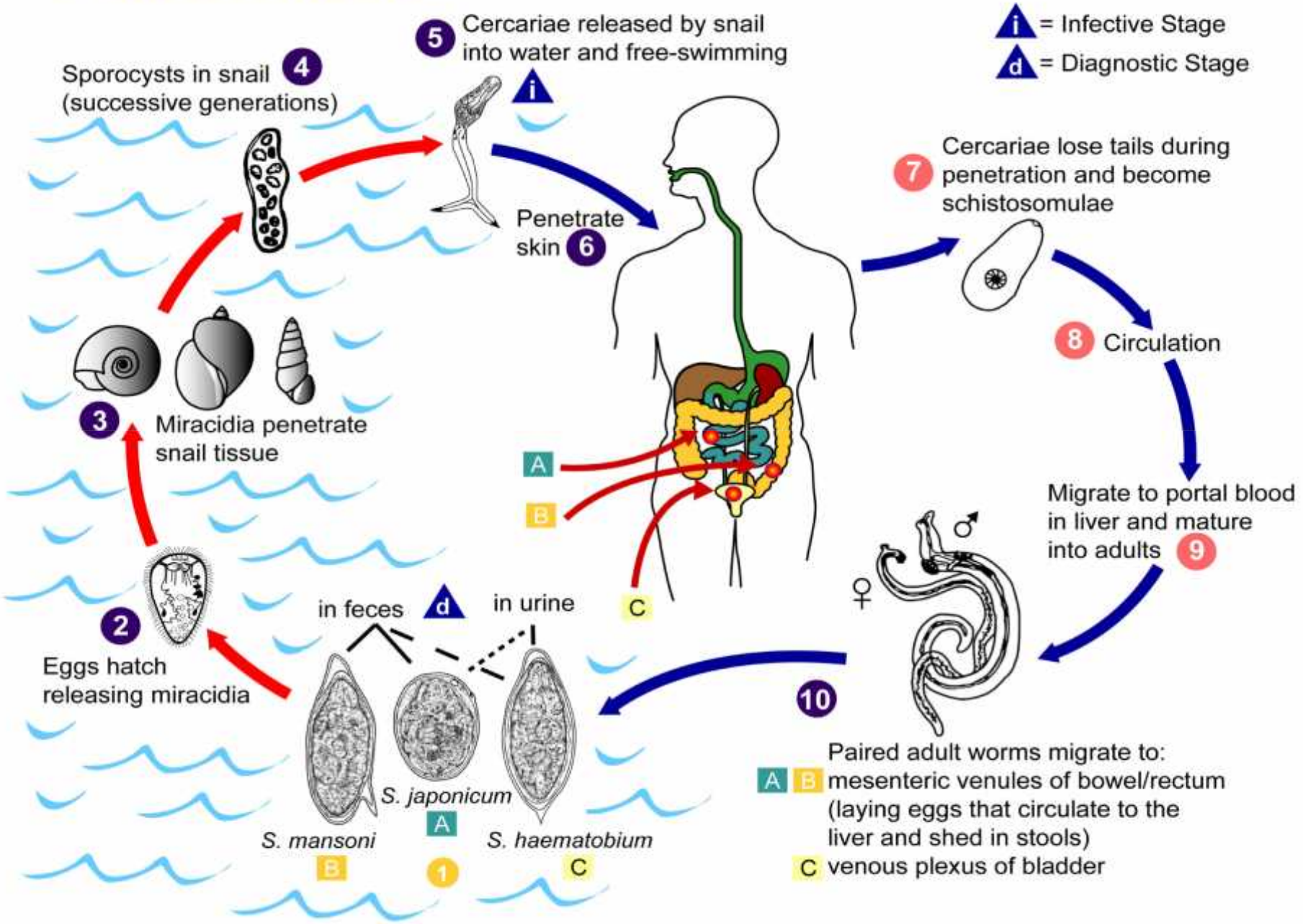
5.Roberisiella for Schistosoma malayensis.

Mode of transmission :

Infection is acquired from water containing free swimming larvae (**cercariae**) that have developed in snails which easily enter through the human skin .

Humans are infected when they come in contact with larva-infested water . Fork-tailed larvae, the **cercariae**, lose their tails as they penetrate deep under the skin. They are then termed **schistosomules**. They cause allergic skin reactions that are more intense in people infected for the first time. These schistosomules enter the general circulation through the lymphatics and the peripheral veins and reach the lungs. If the infection is massive, they may cause pneumonitis. They pass through the pulmonary circulation, to the left side of the heart, and to the general circulation.

Schistosomiasis



Incubation period :

Acute systemic manifestation (katayama fever) may occur in primary infections (2-6) weeks after exposure.

Period of communicability :

*No person to person transmission .

*Chronic schistosomiasis may spread eggs in urine and /or feces into water for as long as 10 years.

*Infected snails release cercariae for several weeks – 3 months .

Susceptibility and resistance :

Susceptibility is universal.

Re-exposure to infection is common.

Preventive measures:

1. Public education in endemic areas.
2. Hygenic disposal of urine and feces.
3. Improve irrigation and agriculture practices.
4. Using molluscicides for snail breeding sites (costy).
5. Prevent exposure to contaminated water.

a. Use rubber boot.

b. Towel dry skin surfaces and 70% alcohol application

6. Safe water supply for all purposes.
7. Treating patients in endemic areas by **praziquantel.**
8. Advising travelers to endemic areas about risk and methods of prevention.

Control Measures :

1.Reports to local health authority.

2.Sanitary disposal of urine and feces.

3.Investigation of contacts and source of infection.

4.Specific treatment (Praziquantel).

Epidemic Measures:

1. Examine and treat all infected persons specially those with moderate to heavy intensity eggs passage.
2. Pay attention to children.
3. Provide safe water.
4. Warning of public against contact with contaminated water.
5. Use molluscicides in high snail density areas.