

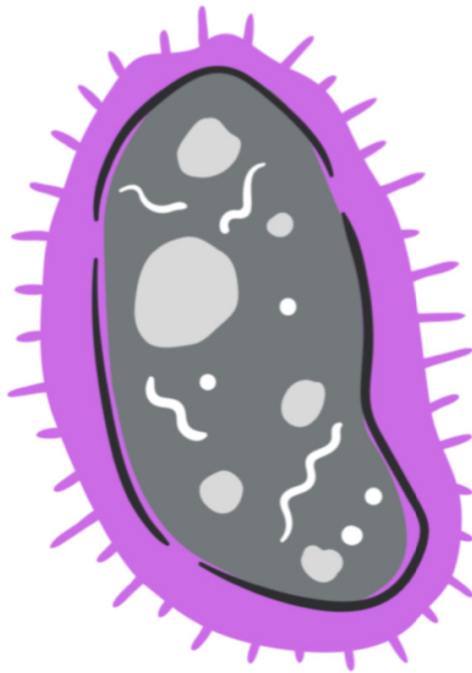


**GIS**




Sheet no. 9

# Microbiology



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Correction: *Salsabeel Alijawabrah*  
Doctor: *Nader Alaridah*



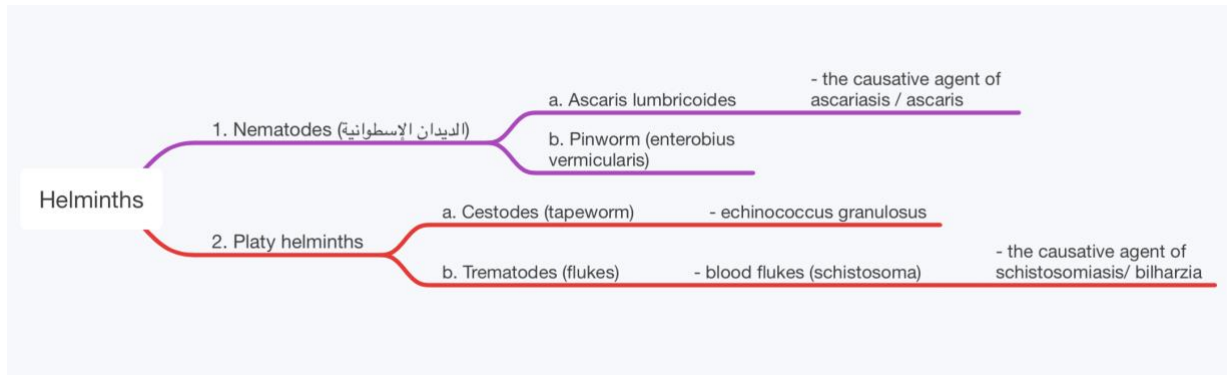
” وَ فَوَخَا كُلُّ ذِي عِلْمٍ عَلِيمٌ “

Last time we talked about the parasitic (protozoal) infections, this time we will talk about parasitic Helminthic infections mainly 4 worms.

As a quick recap :

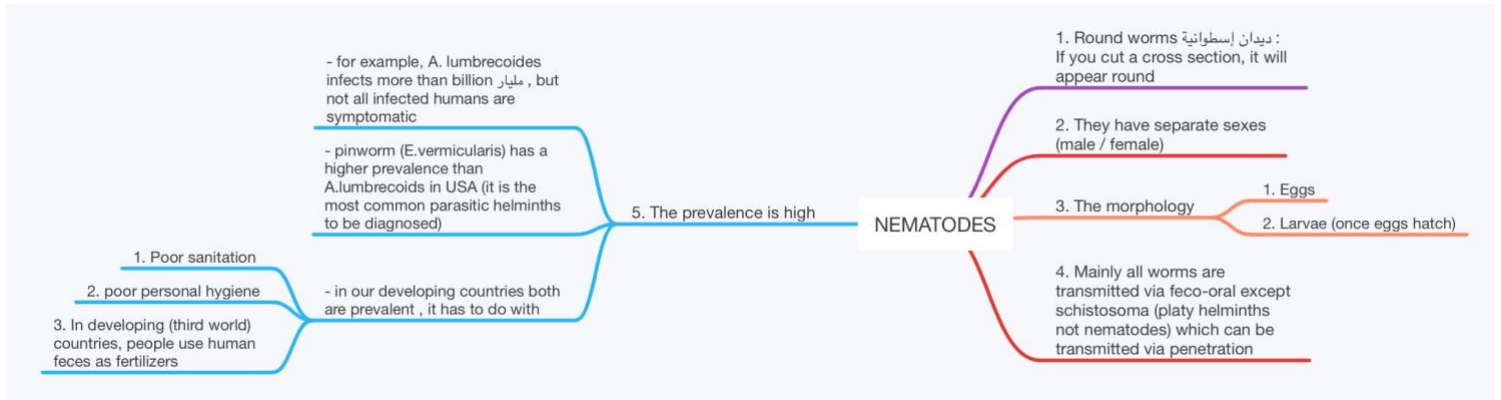
The classification of parasites : 1. Protozoa 2. Metazoa (helminths / worms)

We will talk about 4 worms from different phyla (single is phylum) of worms :

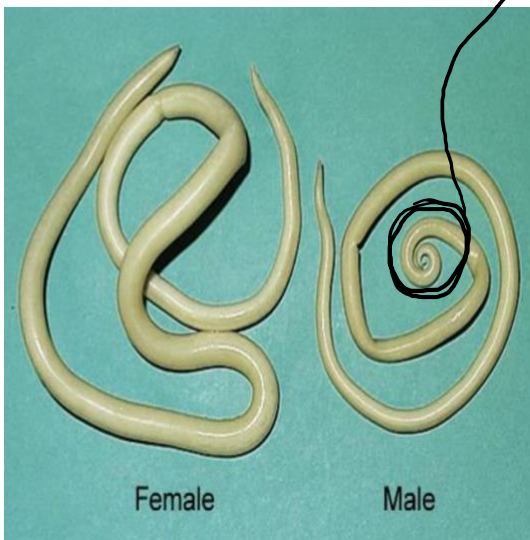


Let's start our amazing journey, these helminthic infections are common in children and young adolescents because of poor personal hygiene.

## A. NEMATODES :

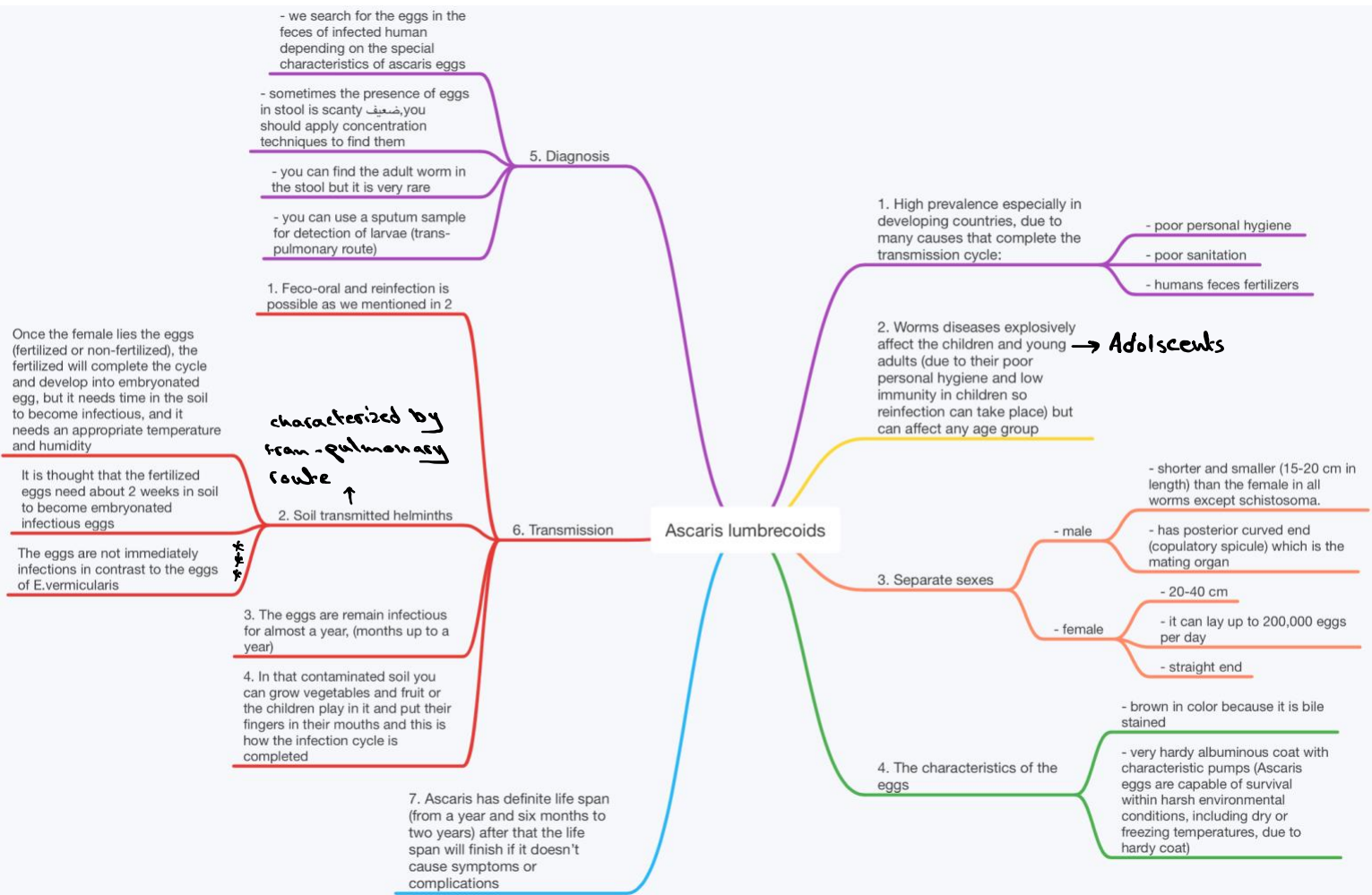


### 1. Ascaris lumbricoids:

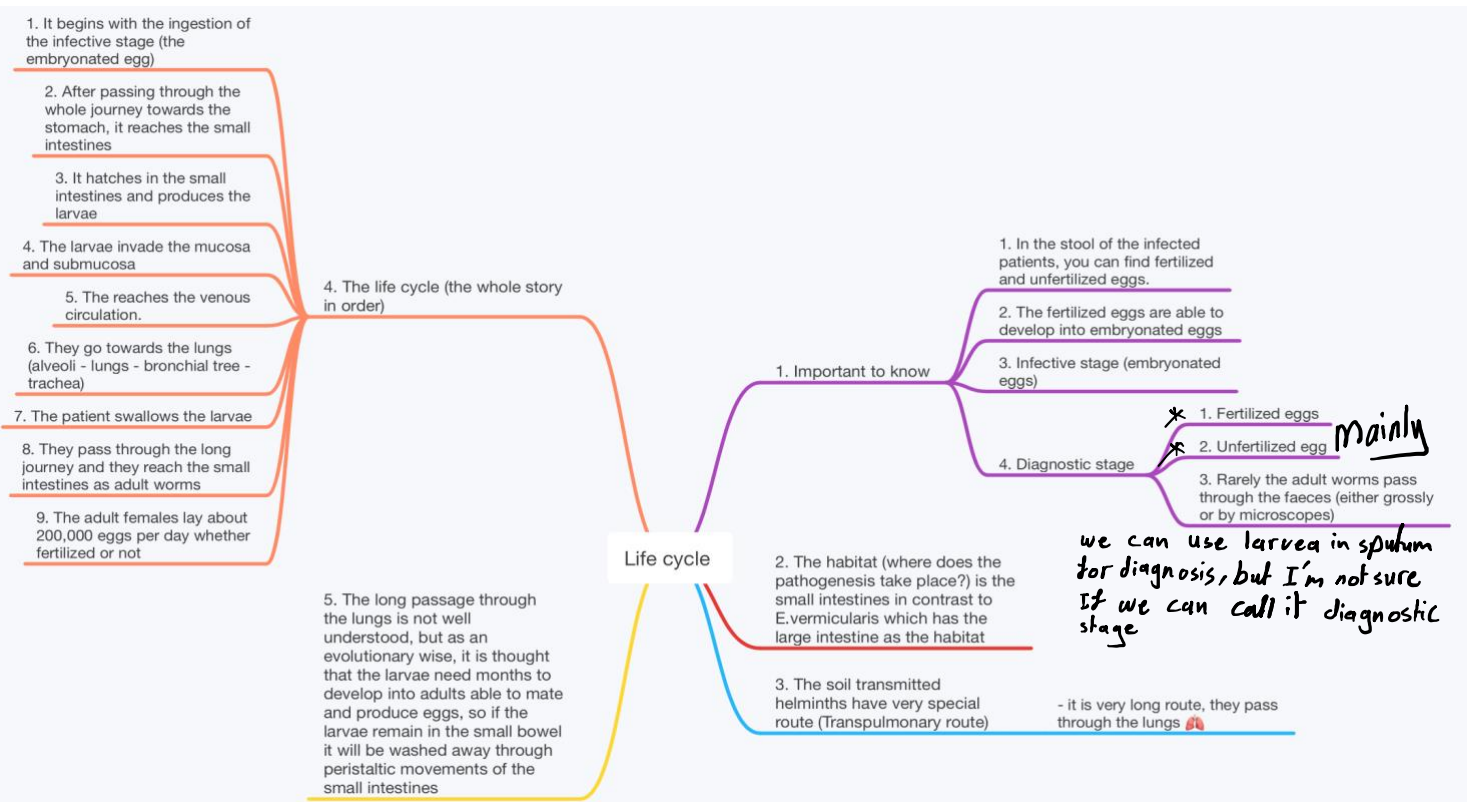


Copulatory spicule

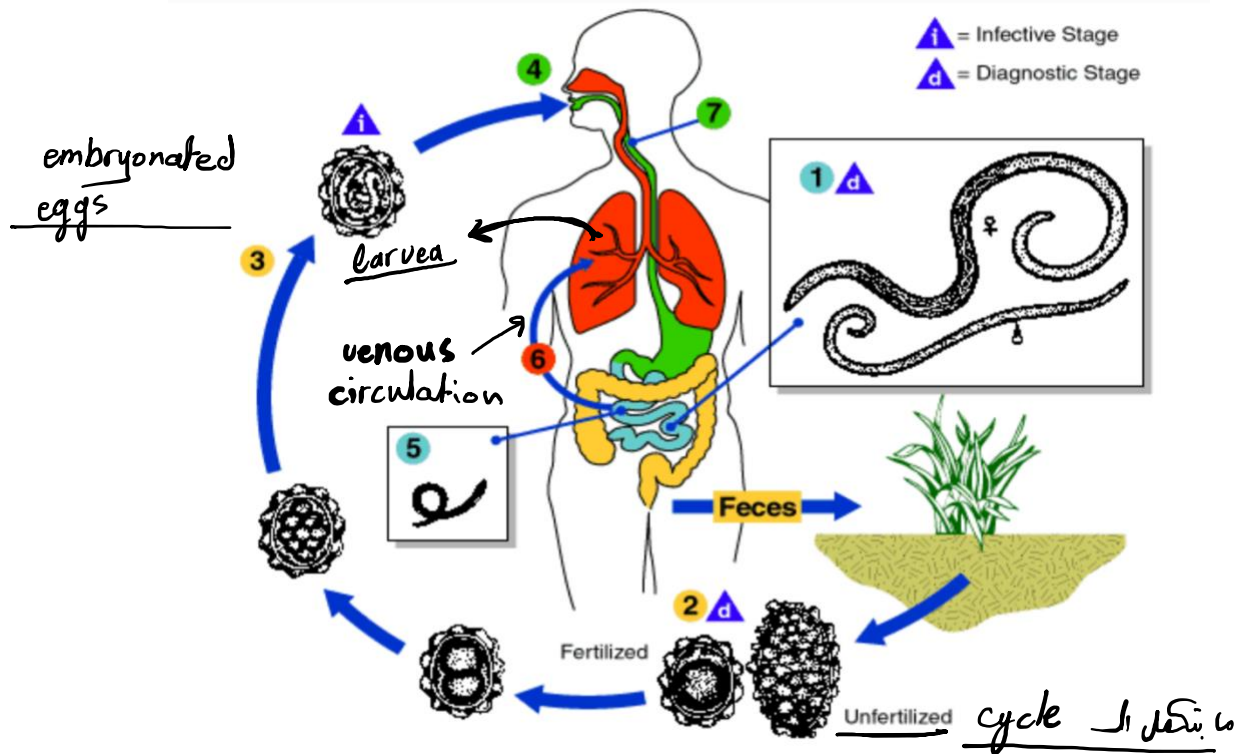




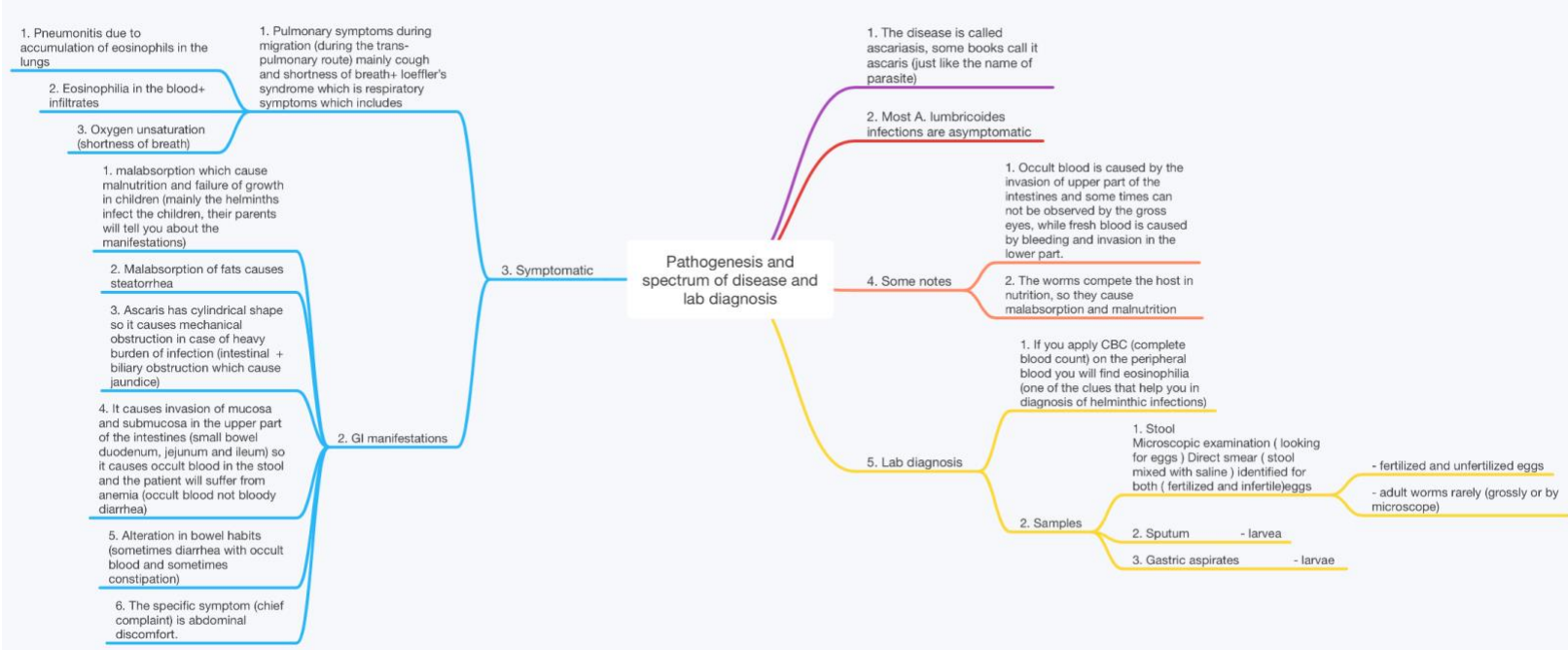
## Life cycle :







### Pathogenesis and spectrum of disease:



-**Treatment:** oral Albendazole 400MG STAT.

-**Duration of therapy:** one or two days then the patient will repeat the regimen after 2 weeks.

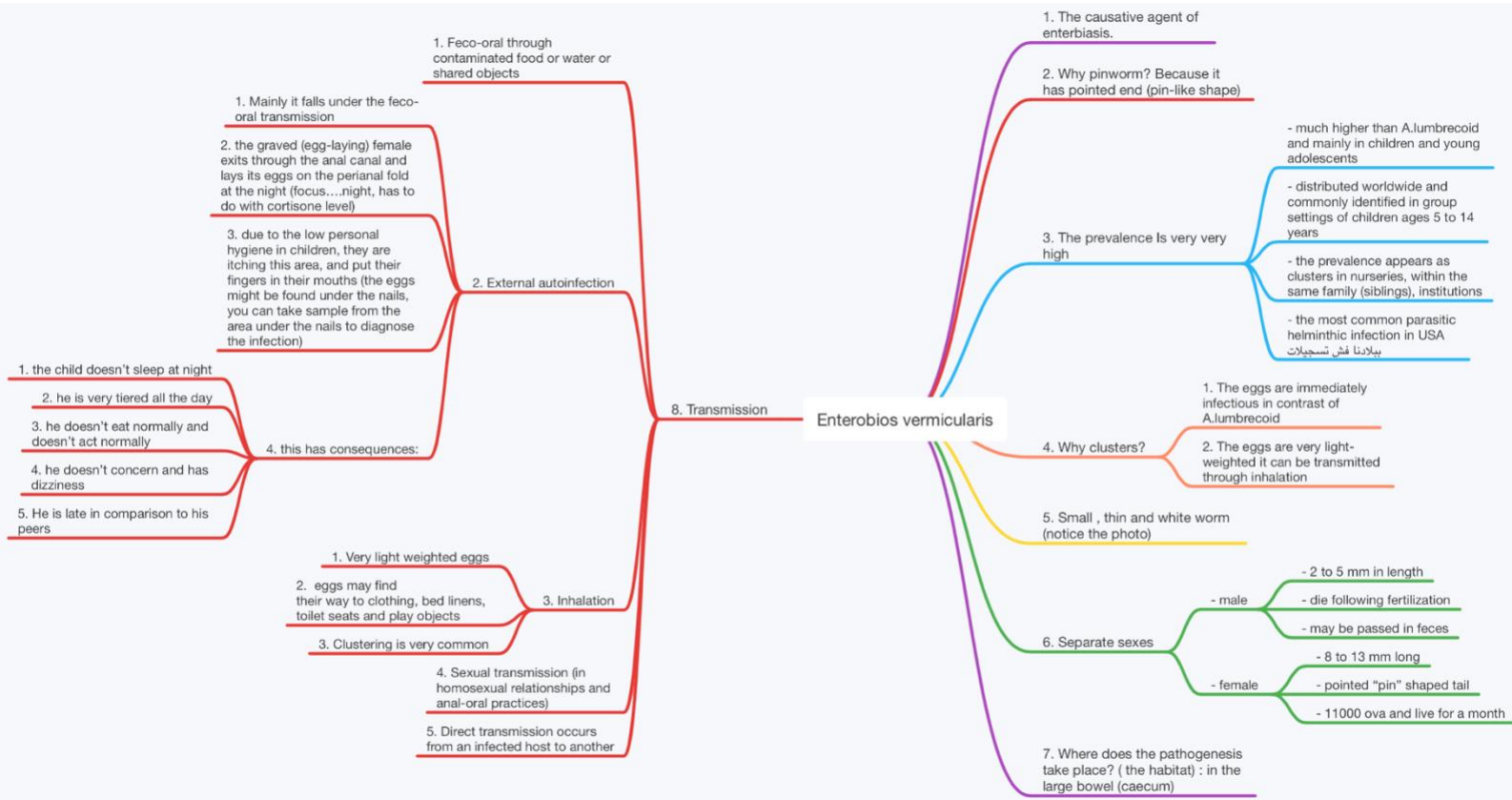
-**Other antihelminthic agents** (can be used in pulmonary symptoms as well): mebendazole, ivermectin.

-**Mechanism of action of mebendazole:** it initiates degeneration of parasitic cells, it works on the cytoskeleton of these cells especially alpha tubulin which is not present in human cells.

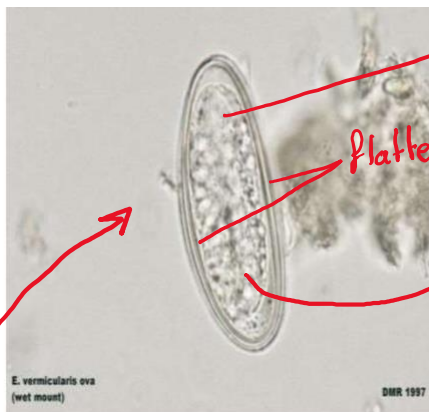
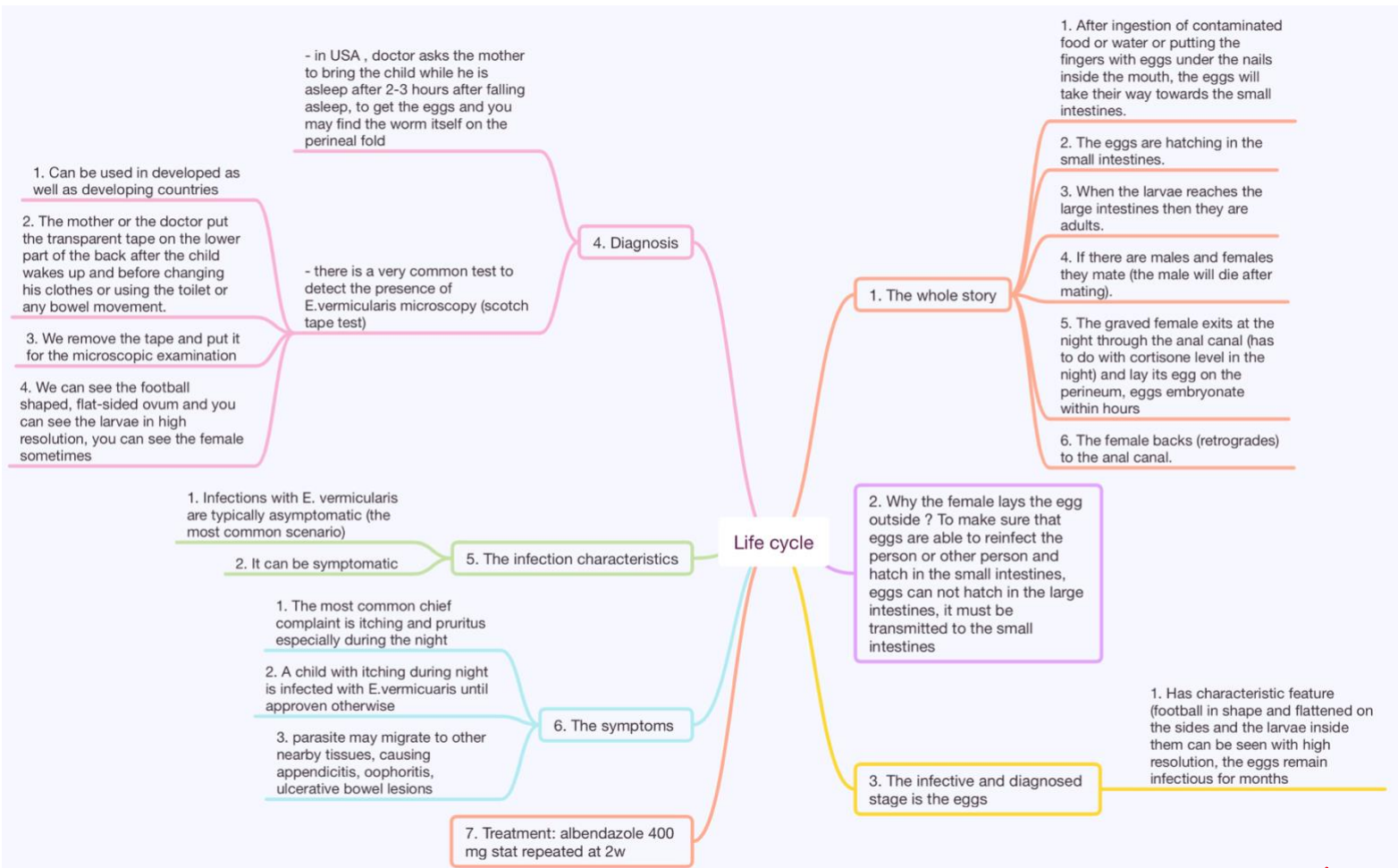
-**The 3 drugs are the drugs of choice in case of helminthic infections and are approved by WHO.**

Here we finished Ascaris lumbricoid

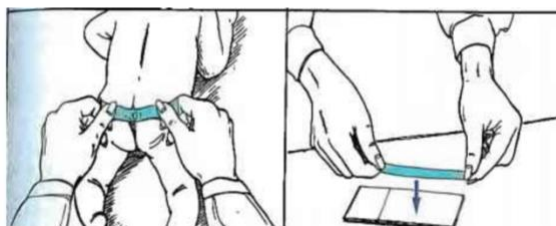
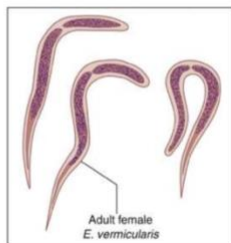
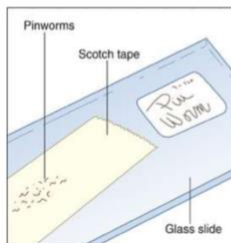
## 2. Enterobios vermicularis / pinworm (nematodes / rounded worms)



**The life cycle, symptoms and treatment:**



Enterobius vermicularis eggs



Scotch tape test

Here we finished *E.vermicularis*



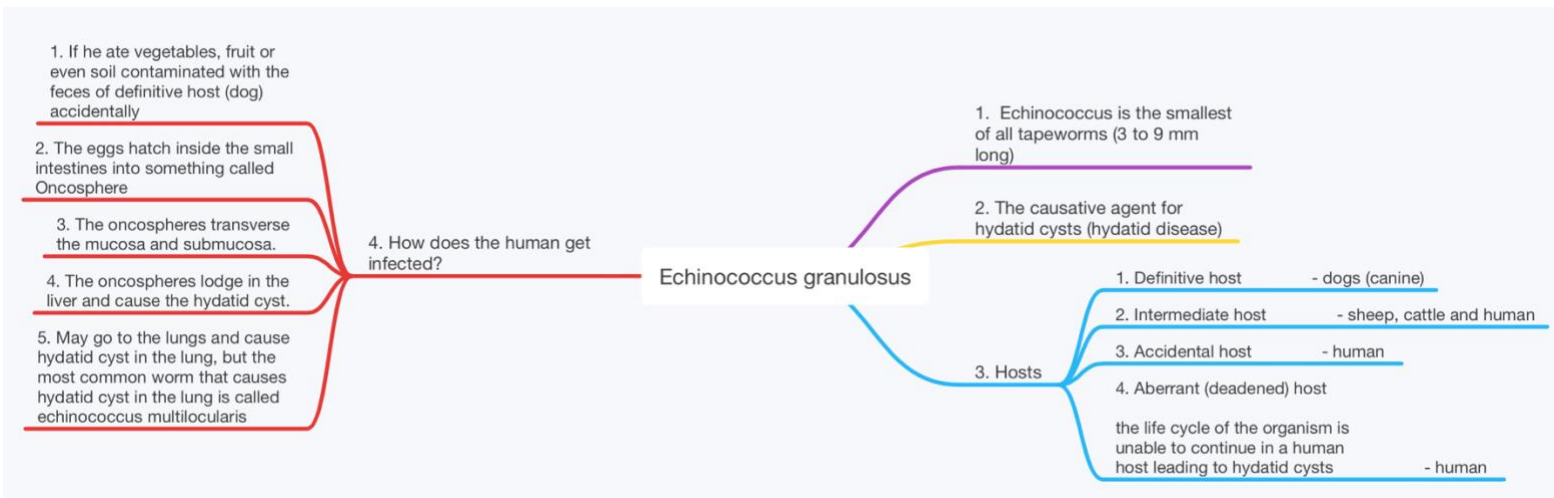
# B. PLATY HELMINTHS

. Platy helminths are mainly hermaphrodites, the same worm has male and female sexual organs (except schistosoma which has separate sexes and the male is larger than the female).

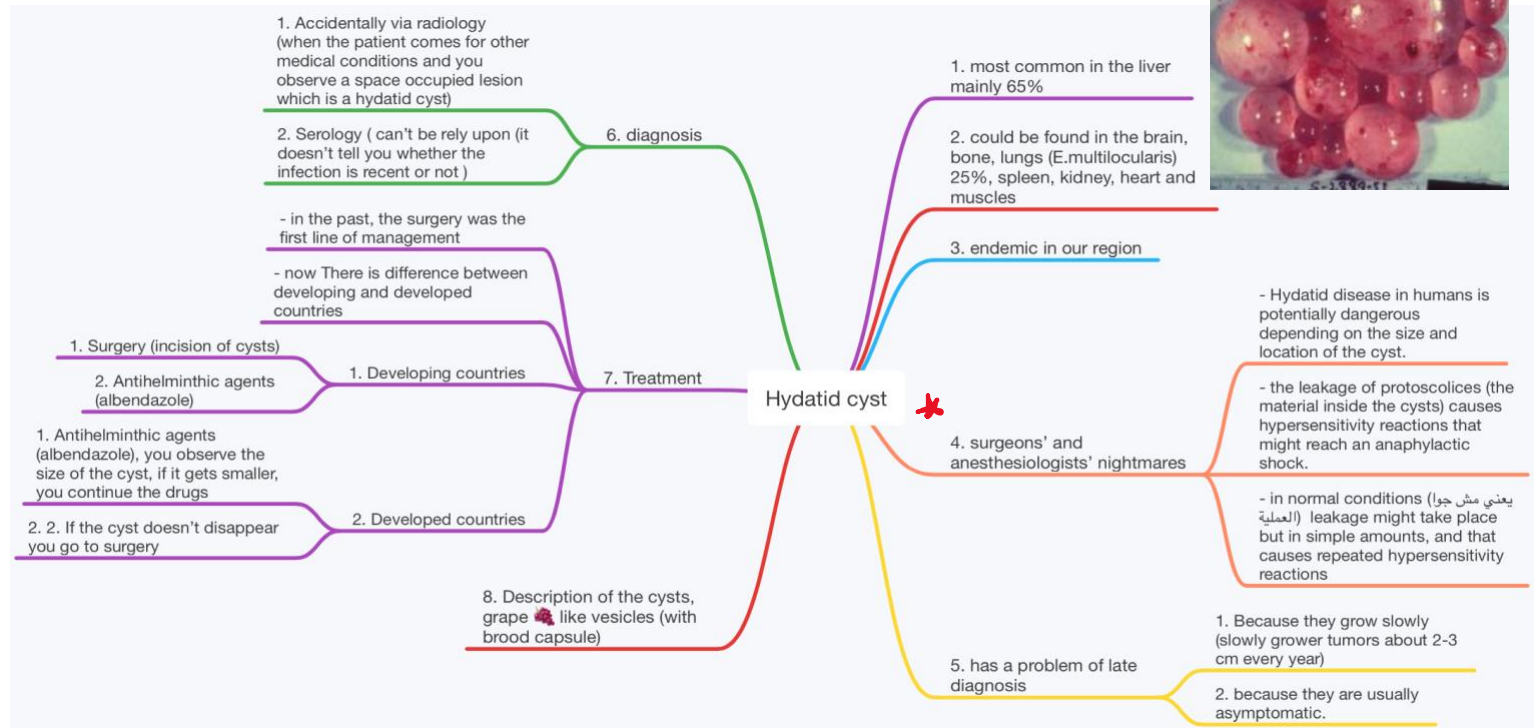
## 1. Tapeworms الشريطية (cestodes) examples (not required in the exam, but was mentioned as revision from the first semester):

- pork tapeworm (Taenia solium).
- beef tapeworm (Taenia saginata).
- dwarf tapeworm (Hymenolepis nana).
- fish tapeworm from raw freshwater fish (Diphyllobothrium latum).
- dog tapeworm, more common in rural areas.
- **Echinococcus granulosus.**

### ● Echinococcus granulosus.



## The hydatid cyst:



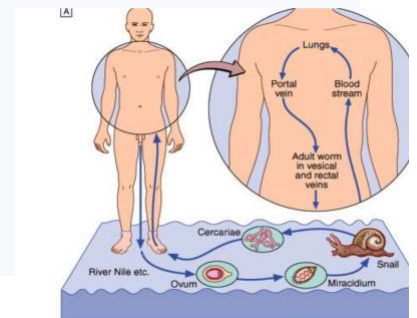
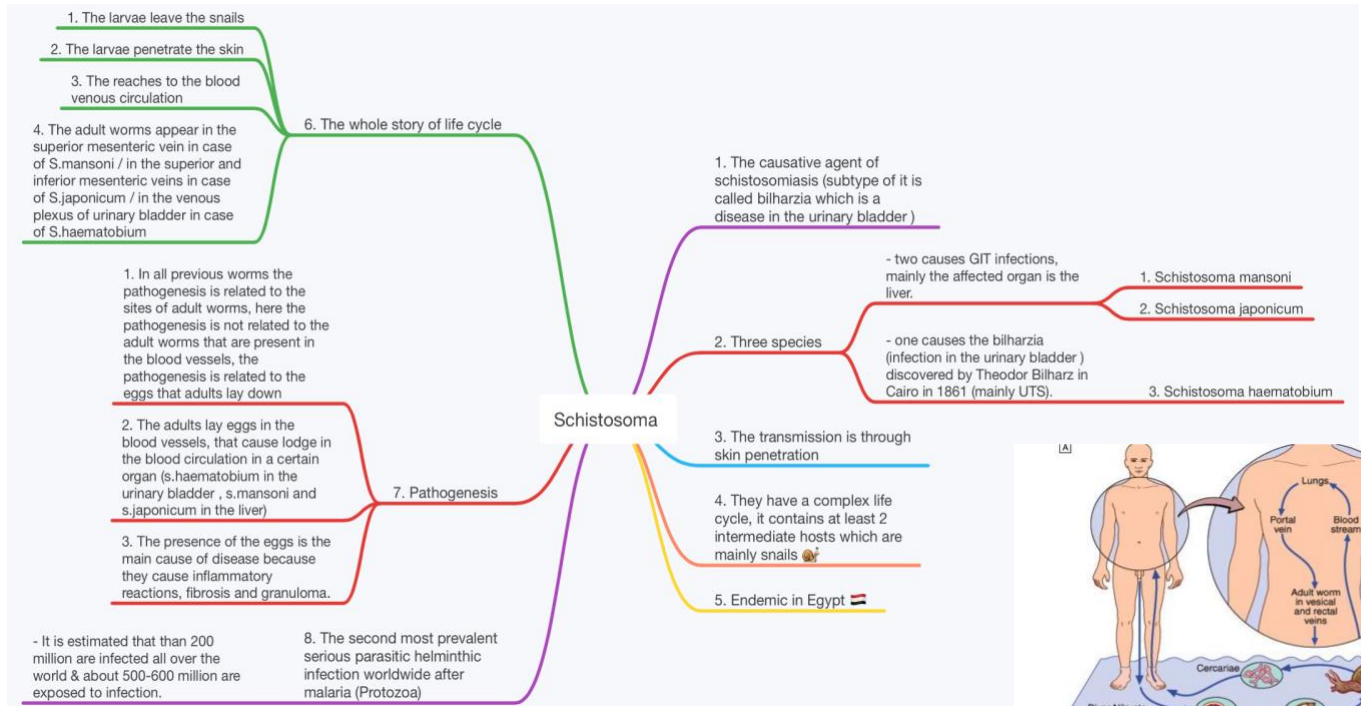
## Some Information (I can't add them to the mind map:in the previous page):

1. The definitive hosts are infected when they eat the meat (goats and sheep) that contains the cysts.
2. The recurrence of hydatid cyst after treatment is possible.
3. The infection can't be initiated after exposure to the feces of infected humans, instead of that the exposure of food that is contaminated with dog feces is a way of transmission.
4. The cysts are discovered accidentally, but if the size of cysts which are in liver are enough to cause symptoms, the patient will come with liver space occupied lesion that is reflected by a right hypochondriac pain, if the cysts press on the bile duct, the patient will be manifested by jaundice.
5. One of the differential diagnosis regarding the hydatid cysts is the tumors.

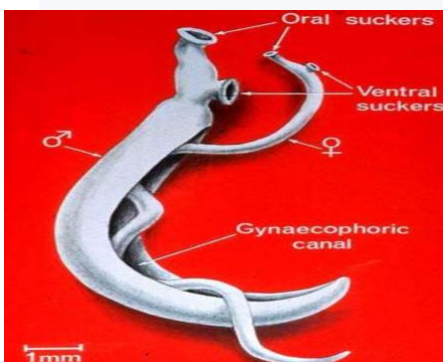
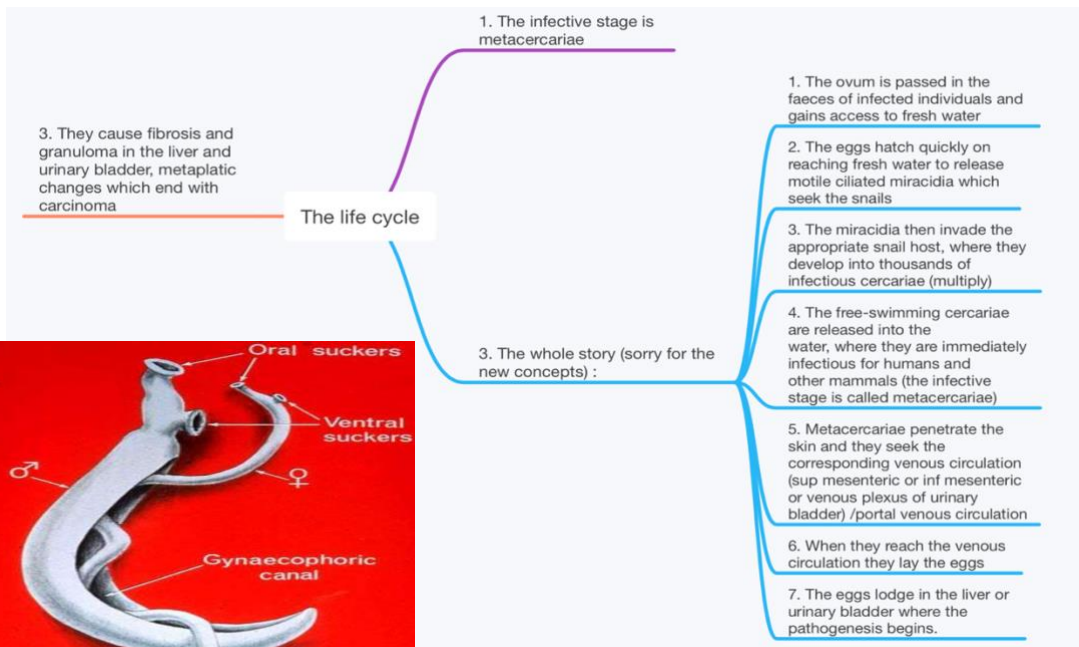
The Echinococcus granulosus finished here

## 2. Trematodes (flukes) (subphylum in the Platyhelminths) flukes:

Lung flukes: Paragonimus westermani / liver flukes: fascioloides / **blood flukes: schistosoma**



## The life cycle:





esophageal varices



1. The eggs cause inflammatory reactions, fibrosis, granuloma (granulomatous reactions) and sclerosis in portal venous (remember mansoni and japonicum which infect the liver, this can affect the portal system)

2. This may lead to portal hypertension, esophageal varices, HSM (hepatosplenomegaly), ascites and liver failure.

1. Skin penetration causing itchy rash

2. Travel via lung causing respiratory manifestations

4. Symptoms

3. The pathogenesis is related to the production of eggs causing

1. Adult male & female have oral sucker surrounding the mouth anteriorly & ventral sucker on the ventral surface with which it attaches itself to the wall of the vessel in which it lives.

2. The male worm is flat, larger and longer, leaf like & folded to form the gynacophoric canal which enfolds the slender female for almost its entire length.

Quick notes

1. Clinical picture

2. Hematological and biochemical

5. The diagnosis

1. S. haematobium through urinary sample (the chief complaint of these patients is hematuria)

3. Confirming the diagnosis by detection of ova in stool or tissue biopsy

1. Praziquantel 40mg /kg for all types and as a single dose is treatment of choice

2. mebendazole, ivermectin and albendazole

3. Treatment

- you can use the stool and we know which type of schistosoma through the characteristics of the spines in the eggs

- mansoni has lateral spine

- japonicum has rudimentary nubby spine

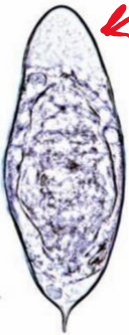
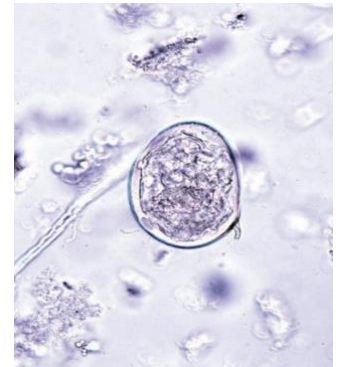
- haematobium has terminal spine

2. S. japonicum \ S. mansoni it depends in which sample you get



Lateral spine for mansoni

nubby spine for japonicum



Terminal spine for haematobium

” وَ آخِرُ دَعْوَاهُمْ أَنِ الْحَمْدُ لِلَّهِ رَبِّ  
الْعَالَمِينَ ”

- سامعوناً على النفس  
- لا ننسوناً من جلال  
دعائكم

- جاهزة لتعديلاتكم واقراطكم