Sheet #30

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**#Schistosoma**

There are three species of schtisoma :-

**1-SchistosomaHaematonium**

 **2-SchistosomaMansoni**

**3-SchistosomaJaponicum**

Unlike other worms, these species aren't leaf shaped, another exception, they are females and males worms, the female worm looks like a nematode, it’s really round.

While the male is long and nearly flat, the male is actually curved and has a groove in the ventral aspect and the female sits there, and that’s how they stay (they presents in pairs). They can live up to 15-20 years acting like this.

They have GI tract with a blind end so the exceptions are:

 1-morphology

2-they have separate sexes

3-they have different eggs >>they don't have operculum and usually they have spine, and the spine helps as in diagnosis ex; **Haematonium** we find that there is terminal spine, In **Mansoni** there is lateral spine.

In **SchtisomaJaponicum** the eggs are smaller, more rounded and there is very reminants at spine on the lateral aspects.

The only thing they have is a **Cercaria**, and it’s like an narrow from the tail (it swims in the water and enters to the patient through the skin ) They are 3-4 cm long .

These worms live in the post-capillaryvenule inside the blood, and they cover themselves with antigens and molecules from the body (ABO-blood group antigen) so the body consider them normal and doesn’t produce any reaction against them.

**Haematonium**>>> lives in post-capillary of >>>bladder(genitourinary system)>>eggs come out with urine.

**Mansoni**>>> lives in post-capillary of >>> large intestine>>eggs come out with feces.

**Japonicum**>>> lives in post-capillary of >>> small intestine>>eggs come out with feces.

So they produce the eggs and then released into the blood, but because they have a spine they stick on the walls >> then they will penetrate through the walls of the organ in which they are living so they will get an access to the lumen of that organ (ex; **Haematonium** they will reach the lumen of the bladder).

So these eggs must be released into the water like if somebody defecates or urinates , then the eggs will release the (paraselium) and attack the fresh water snails and give eise tocercaria, and after that they come out of the snails and then back to the water.

And if anyone uses that water for any reason, they will catch those worms (penetration).

Once they contact the skin they will produce initially itching that lasts for aday or two >> tissue >> blood stream, then it will lose its tail - it is not useful anymore,its only useful during swimming in the water- and they will develop what is known as (Schistosomyola) (baby schistosoma), after that they will go to the liver and in the liver they will continue the maturation and then they pair (male + female )

From the liver they migrate retrogradely in the veins ( mesenteric veins) hepatic portal veins-backwards – until they are stopped by the capillary network in the post capillary venules, that’s for the small and large intestine.

So how they reach the bladder ?

There is anastomoses between the rectal and venous plexus (recycle) .

There are three regions with anastomoses between portal and systemic network:

* Esophagus.
* umbilicus .
* rectal

Remember that theworms are not antigenic they don’t produce rxn.

Belharsia is the disease that is caused by Schistosoma –as the eggs themselves are antigenic they give rise to inflammatory immunological reaction – in the walls of the bladder, walls of small and large intestine.

-Manifestations :

Dysuria/ hematuria/ frequency of micturition .

Because of the inflammation in the wall of the bladder , also other complication; the ureter may be involved and stenosis may occur, so as a consequence a dilation will happen (hydroureter).

Genital tract may also be involved in males and females .

And if it becomes chronic, it may predispose cancer of the bladder, that’s for Haematonium.

But for the other two species it will produce abdominal pain, blood in the feces and diarrhea as well (belongs to GI symptoms).

Those were local manifestation, but we can’t guarantee that all the eggs and worms have entered the walls, so some may go with the blood stream and end up in the mesenteric vein and go back to the liver and produce what is called peri-portal fibrosis.

Actually the hepatocytes aren’t damaged themselves, so you don’t get cirrhosis, and the fibrosis will increase the pressure in the portal circulation and this is known “portal hypertension”, and there will be channels that will by-pass the liver, this can affect the umbilicus and get **(capot medusa)**(dilation of the blood vessels around umbilical region) or the patient will develop **Hemorrhoids**(بواسير)

And also the eggs may escape to the systemic venous circulation, where are they going to go? They will go to the lungs, either directly from cycle vein or from porto-systemic anastomosis, anyway they will produce fibrosis also, then you will get pulmonary hypertension so we will end up with right side heart hypertension (corpamani)

Belharsia is so common in Egypt .

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Other types :

**#Hematophyte:**(4-8 cm )

1. Fasecolar hepatica >> lives in >> liver
2. FasecolapsisBuski>>lives in >> intestine
3. Pexagonimalwostermoni>> lives in >> lungs

**Fasecolar hepatica** and **FasecolapsisBuski** are the same; the eggs are going to be released in the feces in water also.

Same cycle as Schistosoma until reaching the snails but they stay in fish (aquatic).

So if anyone eat them without cooking, he/she will get beta-sacadium -unlike schistosoma- and produce loops in small intestine and liver.(transmitted by food, it doesn’t penetrate the skin it has to be digested).

\*manifestation in the intestine;

Abdominal pain, ulceration and intestinal obstruction.

\*manifestation in the liver;

Hepatitis , blockage >>Jaundice.

Pexagonimalwostermoni lives in the lung, it produce inflammation and cavities, and the eggs will be on those cavities and you cough them.

So the person may cough them along the mucous or simply swallow them back and then go to the GI tract and go out with feces.

(transmission by coughing or defecation)

#Remember:

1st intermediate host >> Snail

2nd intermediate host >> Aquatic crap

So if you eat the crap without cooking it you will take beta-sercadium>>stomach >> small intestine >> penetrate the walls (cavity) >> diaphragm >> return back to the lungs.

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**#Ecto Parasites**

1. **Louce(lice > plural) :**

Their eggs called nits, they are 3 types :

1. Hair Louce(same morphology as body louce)
2. Body Louce
3. Pubic(crap-like) Louce (small rounded eggs)

A)Hair/head Louce:

A bad hygiene is not necessarily a requirement to get that louce, one infected child in the class can infect the rest students especially in winter and girls.

They feed on blood from the scalp and lay eggs, their eggs are so white and firmly stuck to the hair, we can’t get them off easily, we need special comb.

If we put an ultra-violet light on them they will shine (the eggs).

They don’t transmit any disease, and doesn’t act as a vector for any disease also. But cause an irritant itch and can cause allergy due to the saliva of the louce.

They don’t jump, they walk from one’s hair to another by close contact.

B) Body Louce :

Seen in “درزات الأواعي”,and in associated with bad hygiene, especially in crowded places .

They feed also on blood, but here the problem is that they can transmit diseases; bacterial disease like **Borrelia** (relapsing fever) and typhus disease, it’s a killing disease!

C) Pubic Louce:

Eggs attach to pubic, hair and its asexually transmitted disease but not always.

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1. **Scabies:**

The patient has itch all the time.

Caused by mite “**sacotes scabies**”, it feed on the skin (outer layer of the skin) and produces tunnels, transmitted by close contact.

Sometimes is sexually transmitted.

Main symptom: Allergy

Special areas to detect Scabies: wrist, inguinal region and axilla.

Face is usually spared, but infected babies do have facial symptoms.

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1. **Bed bugs: (cinexlectularius)**

They suck blood, but don’t live on the body, the live in furniture and clothes.

Produce itchy lesions like mosquito bite, and have stinky smell “bugs” .

It takes a long time to eradicate.

It doesn’t act as vector for any disease.

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1. **Flees**:

Jump, their legs are very loose and muscular.

Live on animals, also hard to eradicate.

Usually they stay within the animal’s hair and fur but if that animal dies, flee will still be in the house waiting for another animal or they just go to infect humans (prefer animals).

Plaque disease can be transmitted by flees.

The END :D