\*For better organizing every page contains only one parasite except for the second one .

\*Note all luminal nimatodes do not have intermediate host

Enterobius vermicularis

-**Pin** worm ,Have separate sexes (males and females), 1cm , Life span 8 weeks .

- They live in the l**arge intestine** and cause **oxyriasis**.

-Eggs look like **coffee beams** .

-Main symptom **Pruritis** (eching around the anal opening) which might be intense **at night** disturbing sleep.

-Common infection in **school children** .

**-Doesn’t depend on hygiene** (one child can infect the whole class).

-Theoretically the disease the disease should be self limited but autoinfection happens so treatment is done by giving oral pills and repeat the dose after several months to prevent the autoinfection by others whom were infected by him .

-**Life cycle:** 1) The female worm lays the eggs at the **perianal** skin at night.

2)eggs mature in several hours.

3) human ingest infective eggs after scratching the perianal area by nails, then larvae is released in intestine to form mature worms that migrate again to perianal area to lay eggs again.

Trichuris trichiura

-**wip** worm , 3-5cm ,life span 1-2years.

-found in cecum and **large intestine** .

-thin anterior end to attach to intestine wall and thick posterior end.

-eggs are deposited **inside the intestine** .

-eggs look like **lemon or tea tray**

-The eggs are **not immediately infective** they need to mature first and to be placed in a suitable environment (soil).

-larvae **develops in soil** and become **adult in intestine** .

-symptoms:

1)**abdominal pain and bleading** (resulting in iron def. anemia ) due to attachment to mucos.

2) Prolaps of rectum .

3) Diarrhea.

-Diagnosis is by looking for eggs in the feces.

Ascaris lumbricoides

-Looks like earth worm , 30 cm , life span 6months-2 years.

-The live in **small intestine.**

-Very **muscular** to be able to stay in intestine by moving continuously against digested food because the can`t attach to the walls of intestine .

-Eggs look like **pineapple** ,they are **bistained but look yellowish.**

-Eggs are not urinated ,they pass with feces ,they do not mature as they pass ,they need to stay in soil for 6 weeks to develop and become infective .

-Not common nowadays

Symptoms:

1) **Underweight** and pale patient due to chemicals produced by the worms.

2)If there are too many worms (20-30) , this will result in **intestine obstruction.**

3)The worm may go into ampulla of vater and result in pancreatitis or reach the appendix and cause appendicitis . eggs in the lung may cause pneumonitis.

Diagnosis : by seeing worms in feces or by looking for the eggs in feces.

Treatment**: piperazine** , not by killing it but by paralyzing its muscle so it can get out the body easily .

-**lifecycle** : After infective eggs reach intestine larvae go through the intestine walls to blood vessels then to liver then to the lung. In the lung larvae go through further maturation and get out to pharynx . In the pharynx they stuck in the mucus and unconsciously by swallowing this mucus larvae get back to intestine again where they go through final maturation steps.

Hook worms

-1 cm , have **teeth like structures** that help them to anchor them selves to villi of small intestine

-They cause **iron diff. Anemia**

-Have two species **Ankylostoma Dudenale and Necator Americanus** ; they differ from each other by the shape of the teeth.

-**Life cycle**: After producing eggs(contain larvae ) that pass to feces into soil, in the soil they give rise to **Rhabditiform** "thick larvae";which lives free and feed on vegetable debris .Rhabditiform becomes thin to give rise to **Filariform**. Filariform stucks to the dorsum of the feet by "**Thermotaxis**" and enter the foot by penetration to reach the lung .Once they reach the lung the life cycle continues as in scaris worms .

Trichinella spiralis

-Lives inside GIT inside the **submucosa.**

-They do not lay eggs,they lay the larvae immediately.

-**Life cycle**: After laying larvae they go to blood vessels to spread through circulation ,as they can reach the circulation they can reach every organ in the body but they only can mature in skeletal striated muscles. In maturation they become spiral and covered by inflammatory cells resulting in cysts (larvae surrounded by fibrous tissue, can be calcified) , these cysts may stay there for 2 years until eaten resulting in infection.

-Intermediate host **(** ( larvae in striated muscles ) ( note : primary host can be intermediate host as well ) **)**.

-Infect many animals ,pigs ,humans.(human is a **dead end** intermediate host )

-In intestine it will not cause any infection but in **muscles swelling** will result(main symptom).

-In early stages myocarditis, pneumonitis and fever take place, and if there are many worms the patient will dry.

-Eosinophilia reaches 40-50%.

-Muscle enzymes are elevated like **creatine phosphokinase ,LDH** .

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