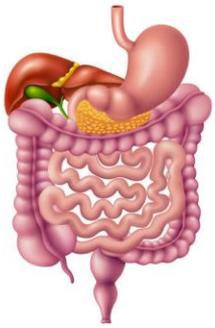


Intestinal nematodes

Part 1

Presented by

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Intestinal nematodes



- **Inhabit the large intestine:**
 - *Trichuris trichiura*

- **Inhabit the small intestine:**
 - *Ascaris lumbricoides*
 - Hookworms
 - *Strongyloides stercoralis*

Trichuris trichiura (Whip worm)



- **Geographical distribution:** Cosmopolitan

Adults from 3-5 cm



- Cellular esophagus
- One set of genitalia



Size: 50x20 μ

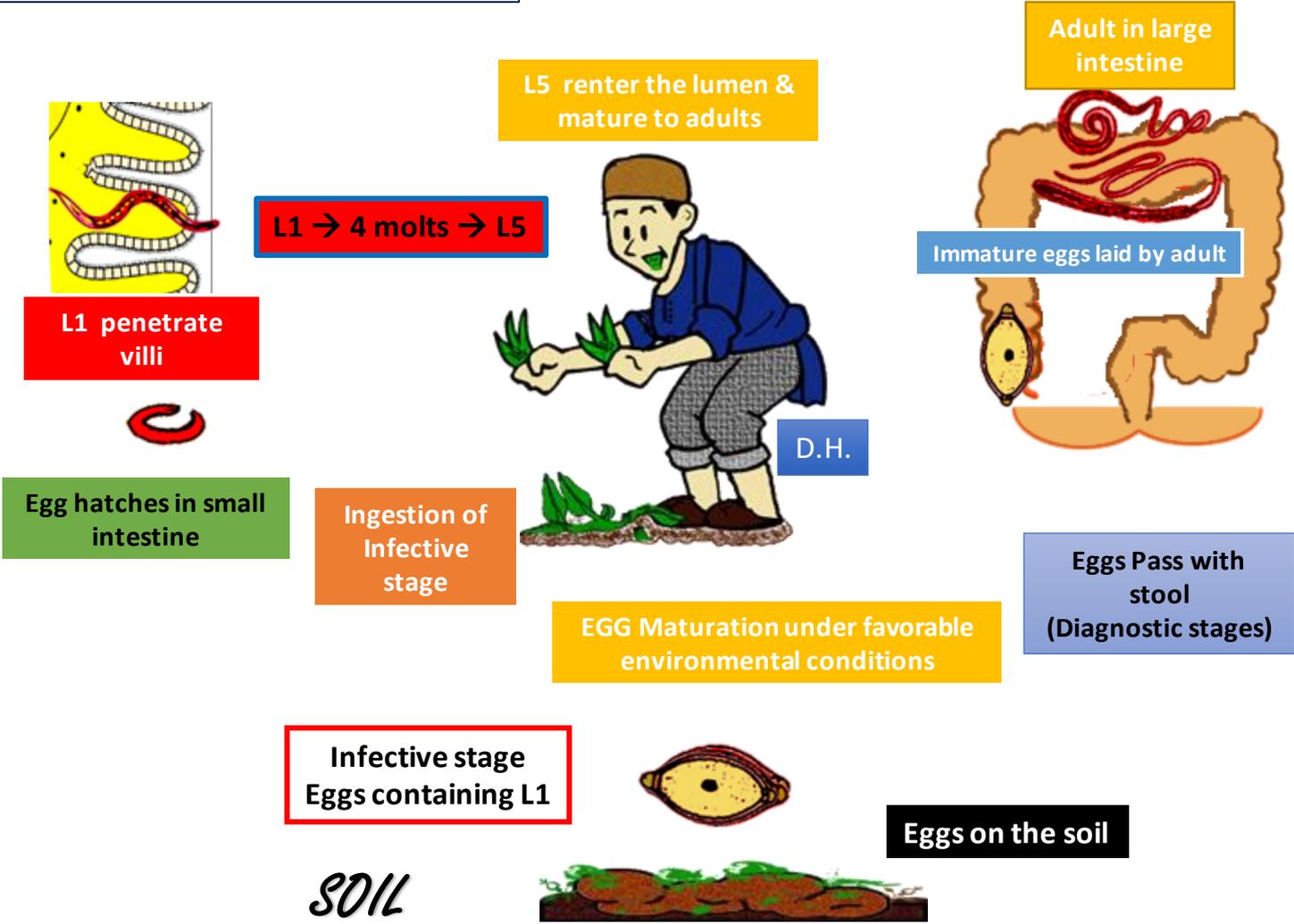
Shape: Barrel shape with two polar mucoid plugs

Colour: Brownish

Content: Immature



Life cycle of *Trichuris trichiura*



Trichuris trichiura (Whip worm)



- **Habitat:** Large intestine

- **Hosts:**

- D.H: Man
- R.H: Monkeys and pigs



- **Diagnostic stages:**

- Immature eggs
- Adults

- **Infective stage:** Mature embryonated egg containing first-stage larva

- **Mode of infection:**

- Ingestion of contaminated food.
- Ingestion of mature eggs with contaminated hands from soil.⁵

Pathogenesis & Symptomatology



Disease: Trichuriasis

➤ Embedded anterior part → haemorrhage and mucosal ulceration.

➤ Distension, nausea, vomiting, abdominal pain & **bloody diarrhea**.

➤ **Dysentery**: Due to the affection of rectal mucosa → tenesmus with mucus and blood and **rectal prolapse** especially in children.

Obstruction of the appendix and secondary bacterial infection → **appendicitis & abscess**.

Diagnosis:
Detection of eggs or adults in stool or by colonoscopy

Treatment: Albendazole

Anaemia:

➤ **Microcytic hypochromic anaemia**: Due to continuous blood loss from bleeding sites or blood sucked by the worm.

➤ **Hyperchromic pernicious anaemia**: Due to toxins.

Growth retardation



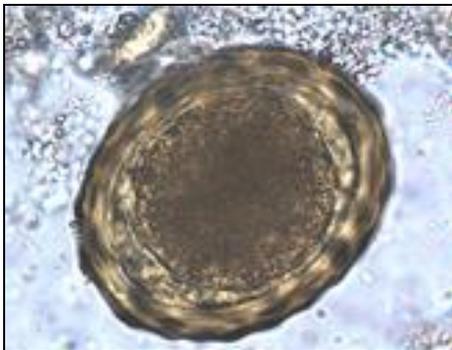
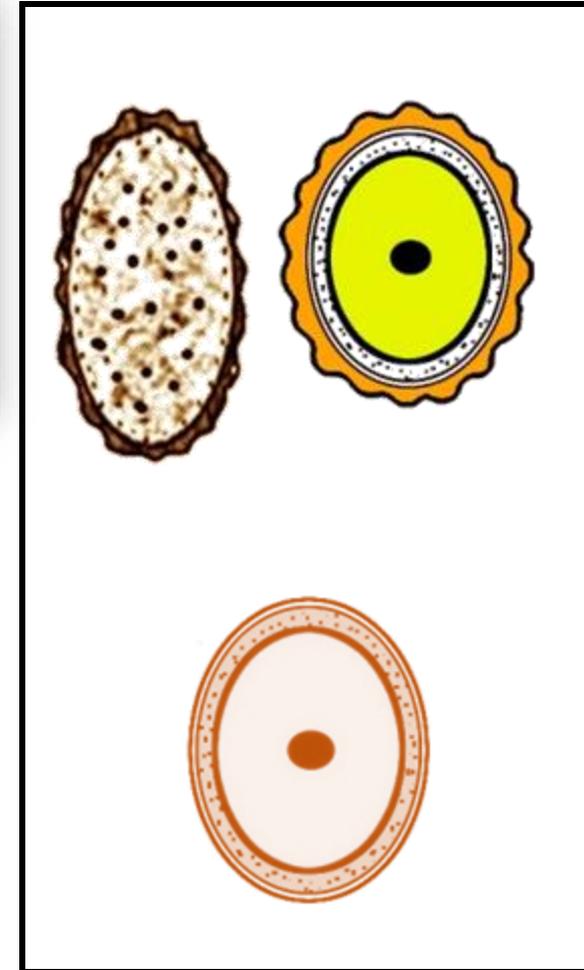
Ascaris lumbricoides



- **Geographical distribution:** Cosmopolitan

Adults 20-40cm.

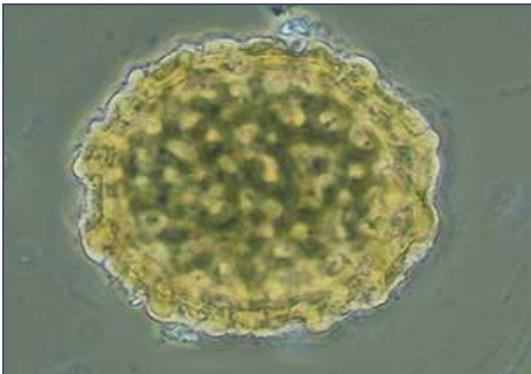
- Club shaped-esophagus and mouth with 3 lips
- Male has 2 spicules
- Female has 2 sets of genitalia



Eggs (D.S)

1-Fertilized egg

- Size:** 60 × 45 μm
- Shape:** Oval to round.
- Shell:** Inner thick shell and outer mamillated coat.
- Color:** Golden brown (bile stained).
- Content:** Immature (one- cell stage).



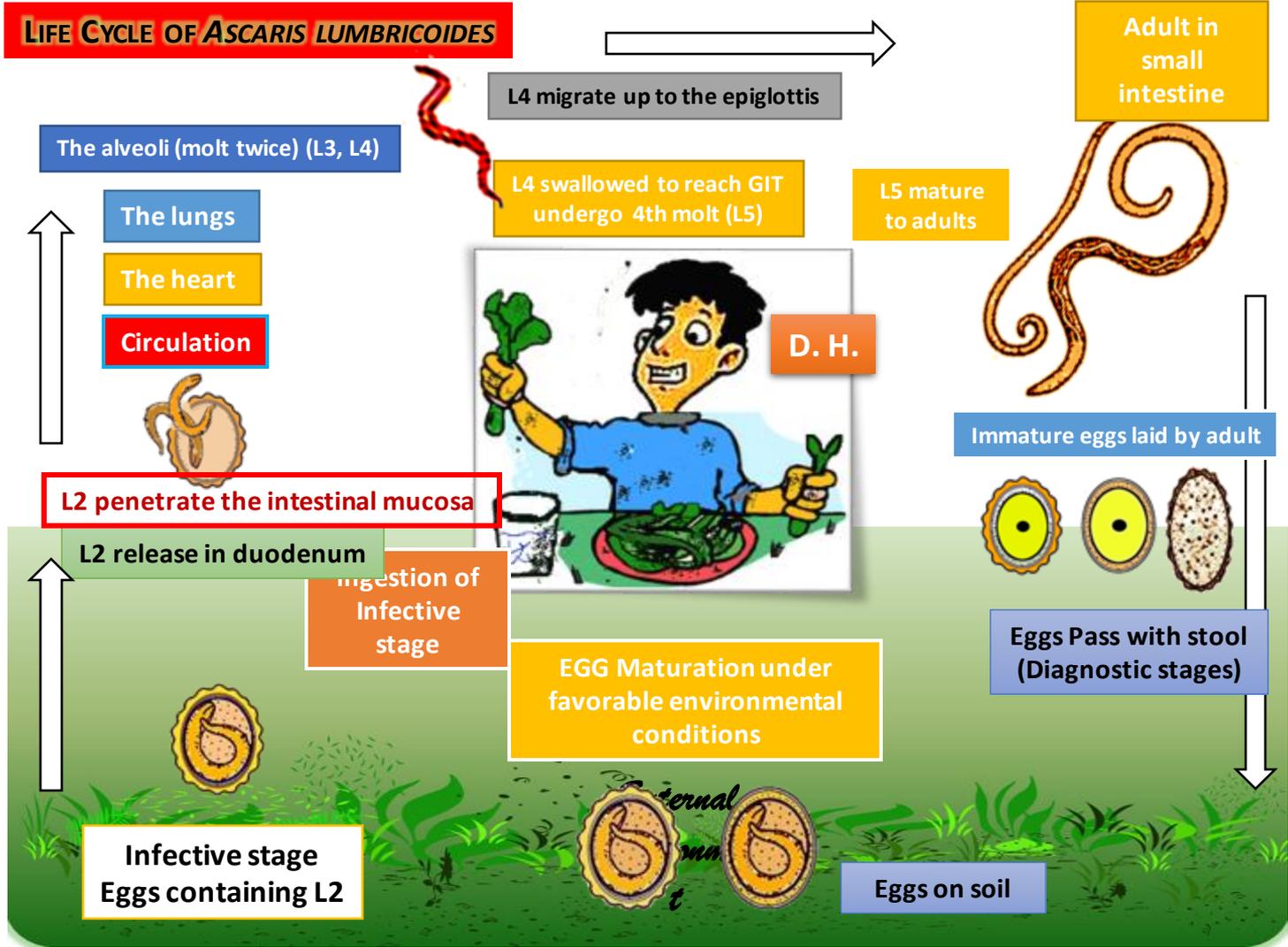
2- Unfertilized egg

- Size:** 90 × 45 μm.
- **Shape:** Elongated.
- **Shell:** Thinner with ill-developed mamillated coat.
- **Color:** Golden brown.
- **Content:** Multiple refractile granules.

3- Decorticated egg

Fertilized or unfertilized egg that loses the mamillated layer.





Ascaris lumbricoides

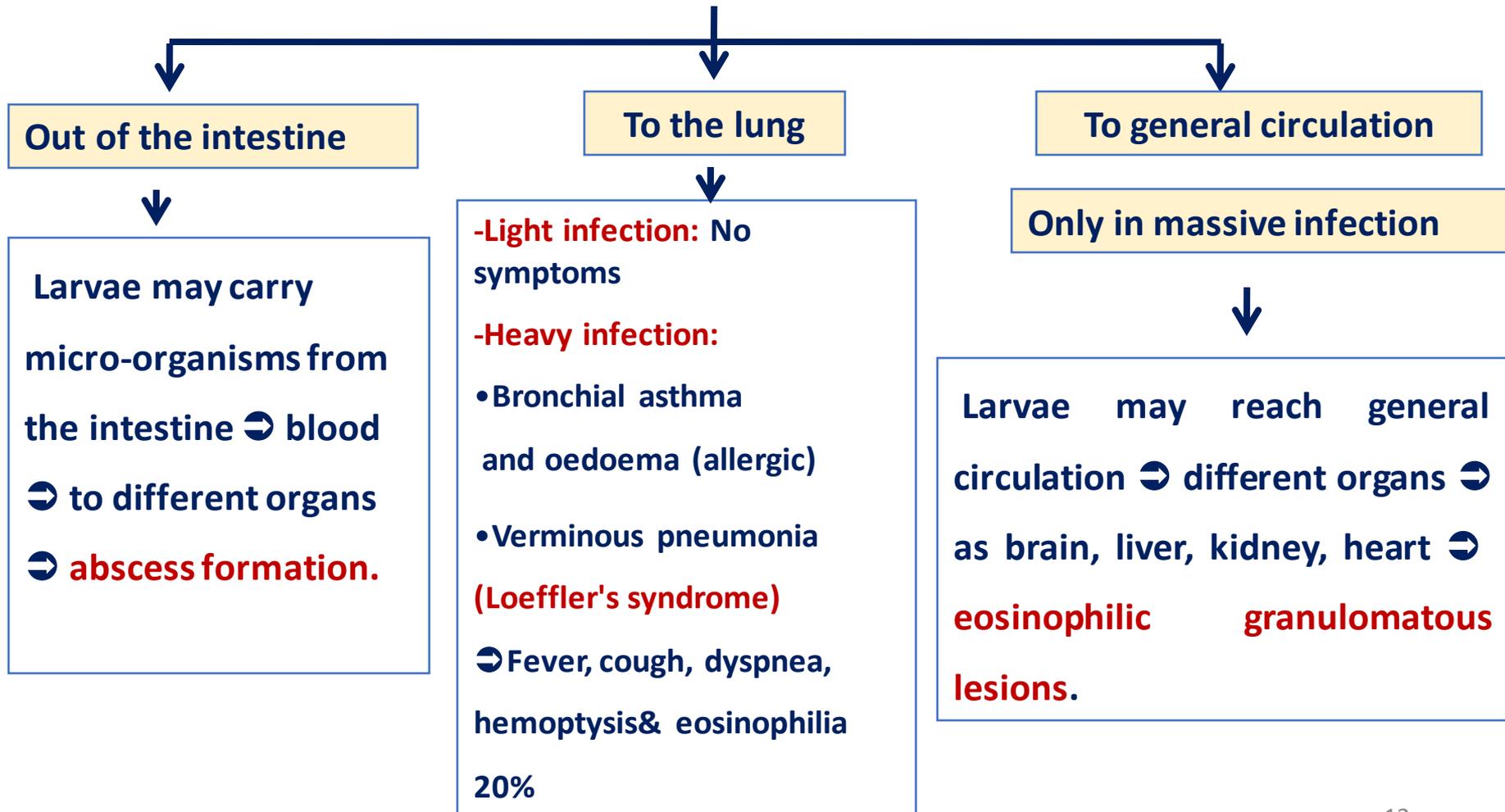


- **Habitat:** Small intestine
- **Hosts:**
 - D.H: Man
- **Diagnostic stages:**
 - Immature eggs (fertilized-unfertilized and decorticated)
 - Adults
- **Infective stage:** Mature embryonated egg containing second-stage larva
- **Mode of infection:**
 - Ingestion of contaminated food and drinks.
 - Ingestion of mature eggs with contaminated hands from soil.

Pathogenesis and symptomatology Disease: Ascariasis

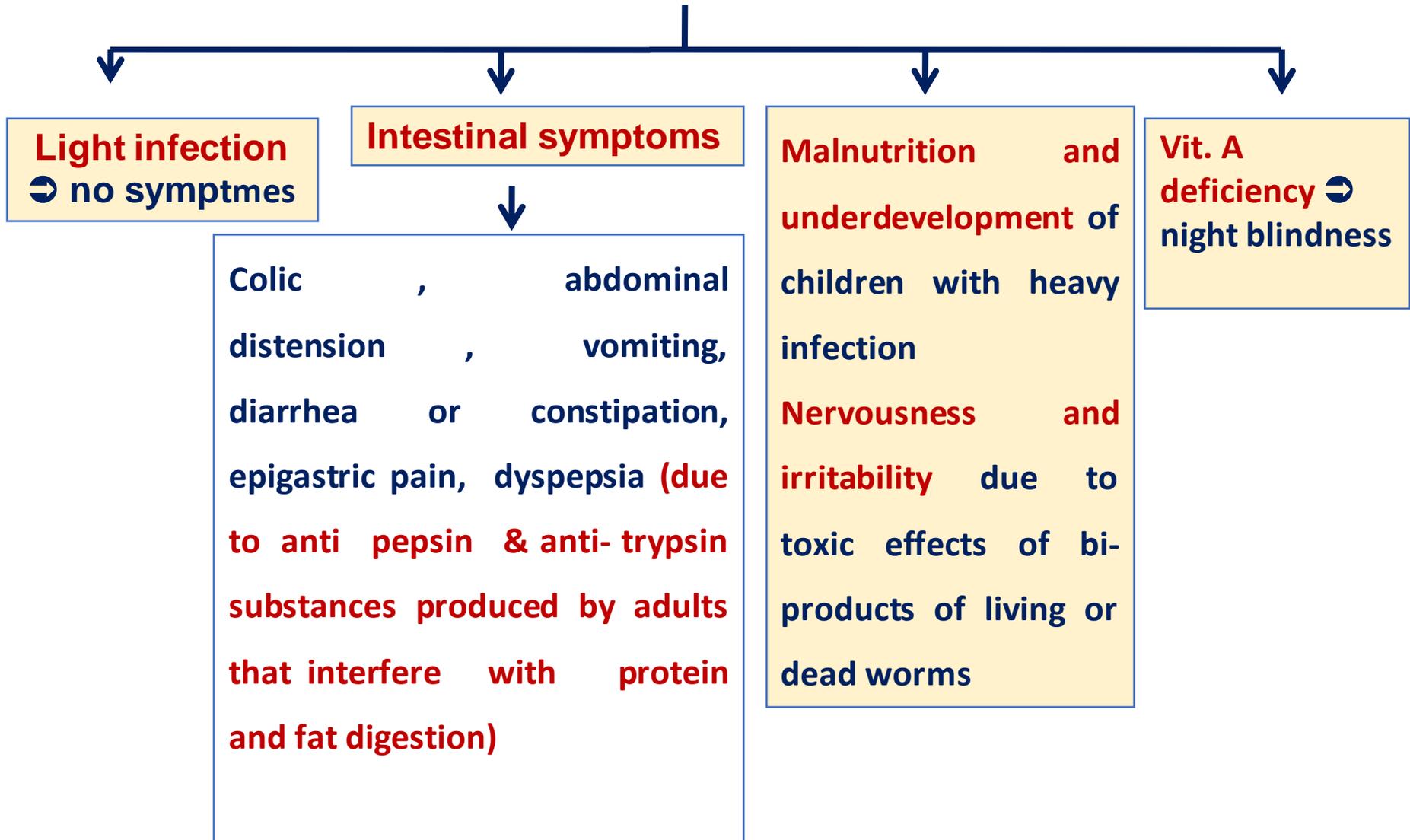


1) Larval migratory phase





2) Intestinal phase



3) Complications



↓ (1)

Worm migration by fever, spicy food, drugs or anesthesia

Obstruction of the pancreatic duct → acute pancreatitis.

-Obstruction of the bile duct → cholecystitis and obstructive jaundice.

-Entering liver parenchyma → liver abscess.

-Stomach → vomiting.

-Oesophagus → escapes from the mouth.

-Nasopharynx → escapes from the nose.

-Oropharynx → Eustachian tube → middle ear and exit through external auditory meatus.

-Hypopharynx → larynx and trachea → aspirated → suffocation and lung abscess.

↓
(2)

Intestinal obstruction



↓
(3)

Perforation of the intestinal wall → peritonitis



Laboratory diagnosis

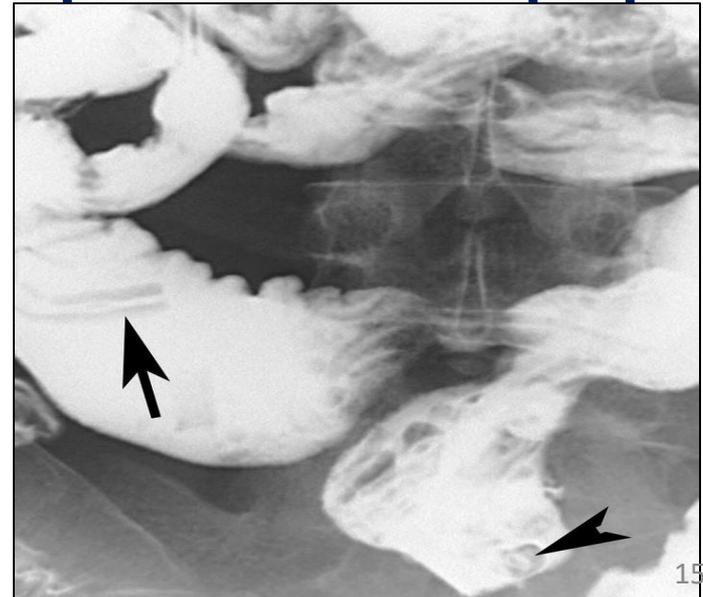


1) Detection of **eggs** in stool by direct or concentration

2) Detection of the **adult worms** in stools or vomits.

3) Detection of adult worms in the abdomen **by X-ray**

after barium meal. They appear as parallel radio-opaque shadows (**tram way sign**).



Treatment: Albendazole





Explain why?

- A patient with ascariasis should be treated before any surgical procedures.

- Anaemia may complicate *Trichuris trichiura* infection