Other organs affected in typhoid fever & Its effect and complications	
Spleen:	• Acute splenic swelling (large, soft, red and diffluent).
Liver:	• Cloudy swelling (large, pale and slightly soft). • Focal necrosis.

Gall bladder:	• Cholecystitis.
	• Focal necrosis.
	• Predisposition to:
	  ○ **Chronic carrier state.**
	  ○ **Gall stone formation.**

Kidneys:	• Cloudy swelling. • Fatty degeneration. • Pyelonephritis.
Lungs:	• Bronchitis. • Bronchopneumonia.
Heart:	• Cloudy swelling. • Fatty degeneration. • Dilatation.
Veins:	• Thrombosis. • Thrombophlebitis.
Muscles:	• Degeneration (Zenker's); • coagulation necrosis;
Joints:	• Haemorrhage. • Arthritis.
Bones	• Osteomyelitis.
Bone marrow and blood:	• Leucopenia. • Diminution of polymorphs with relative increase in mononuclears. • Anaemia.
Lymph nodes:	• Enlargement.
Nervous system:	• Neuritis (peripheral). • Meningitis.
Eyes:	• Conjunctivitis.
Skin:	• Rose spots (rash during the second week); at chest and abdomen.
Sinuses:	• Sinusitis.

N.B. 2

- The incubation period of typhoid fever (Salmonella infection; B. typhosus) is **10-15 days.**
- Then **fever** occurs **with bradycardia, leucopaenia.**
- Malaise, headache, colicky abdominal pains, distension, diarrhoea (preceded by constipation) and prostration are the starting symptoms.

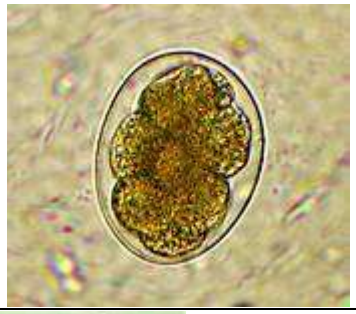
Ancylostomiasis III-4, 2. 452			
***A piece of ileum*:**	• Shows Ancylostoma worms • Scattered erosions and minute foci of ecchymosis		
Ancylostoma worms:	• Are attached to the mucosa (by hooks) • Numerous • Small (each about 1 cm.) • Dark greyish-brown		

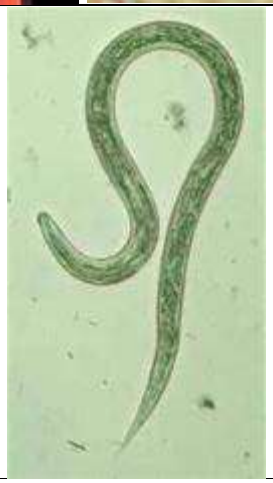
N.B.I:

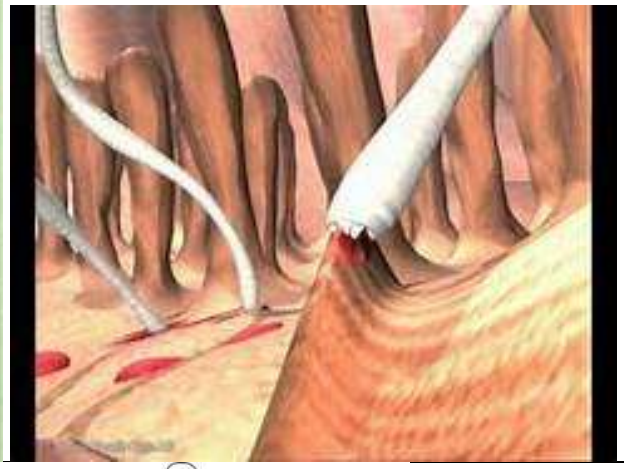
Infection with hook-worms may be accompanied by:

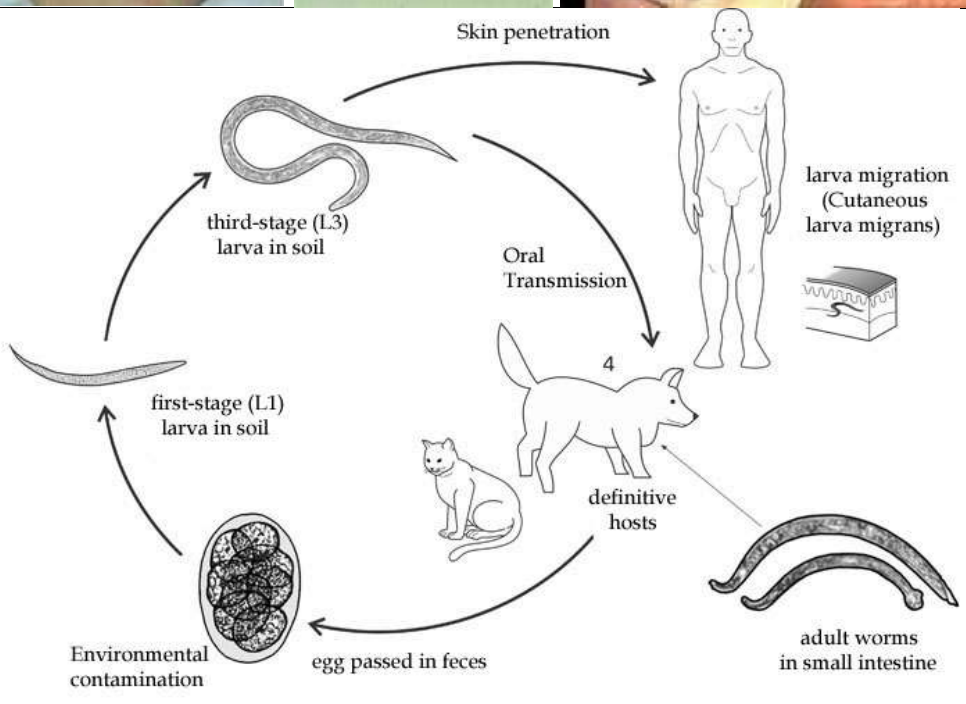
1. *Numerous **bleeding spots in the intestine**, blood-cysts and pigmentation of mucosa.*
2. *Anaemia (which may be marked) → fatty degeneration of heart and other organs.*
3. *Intoxicating effects (palpitation, pain, vomiting, anorexia, wasting, fever, perverted appetite and mental inertia.*
4. *Eosinophilia.*
5. *Frequent passage of ova in stools.*

- **N.B.2:**
- The infection occurs by the **larvae penetrating the skin** → entering the **veins** → passing through **the heart to the lungs.**
- Then, **they escape into the bronchi** →pass up **the trachea** → down the **oesophagus** → reach the **stomach then the intestines where they become mature**.
- The entry of larvae through skin → itch and eruption.
- Maturation of adult worms in stomach → gastro-intestinal disturbances associated with slight pain and a feverish state.
- Parasites in jejunum → **loss of blood & production of a toxic-like substance** → haemolytic anaemia (microcytic).








Skin penetration
larva migration
(Cutaneous
larva migrans)
third-stage (L3)
larva in soil
Oral
Transmission
4
first-stage (L1)
larva in soil
definitive
hosts
Environmental
contamination
egg passed in feces
adult worms
in small intestine

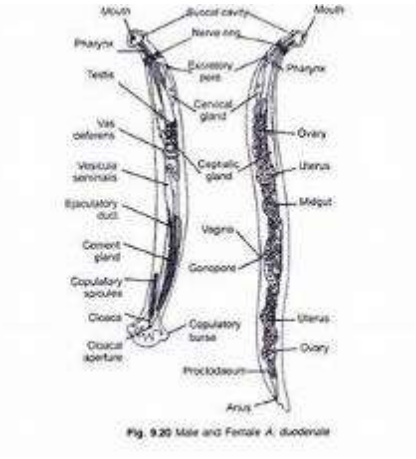
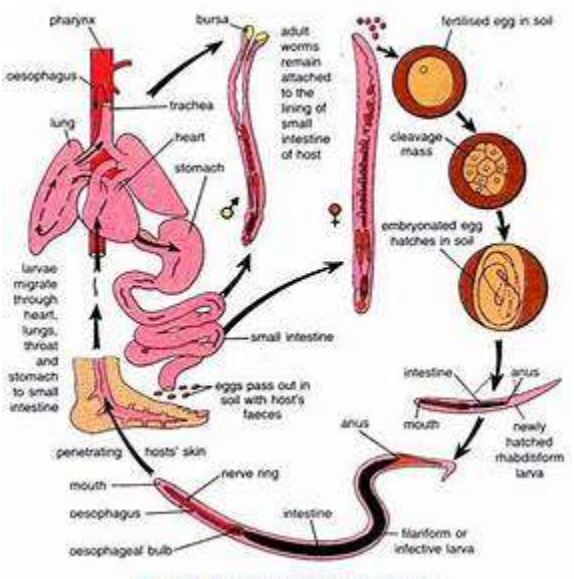
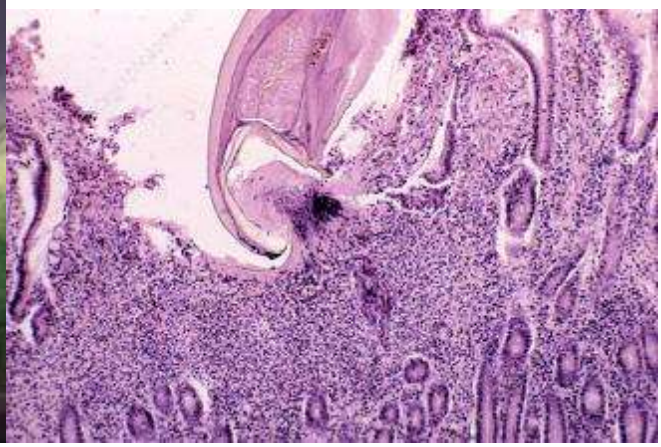


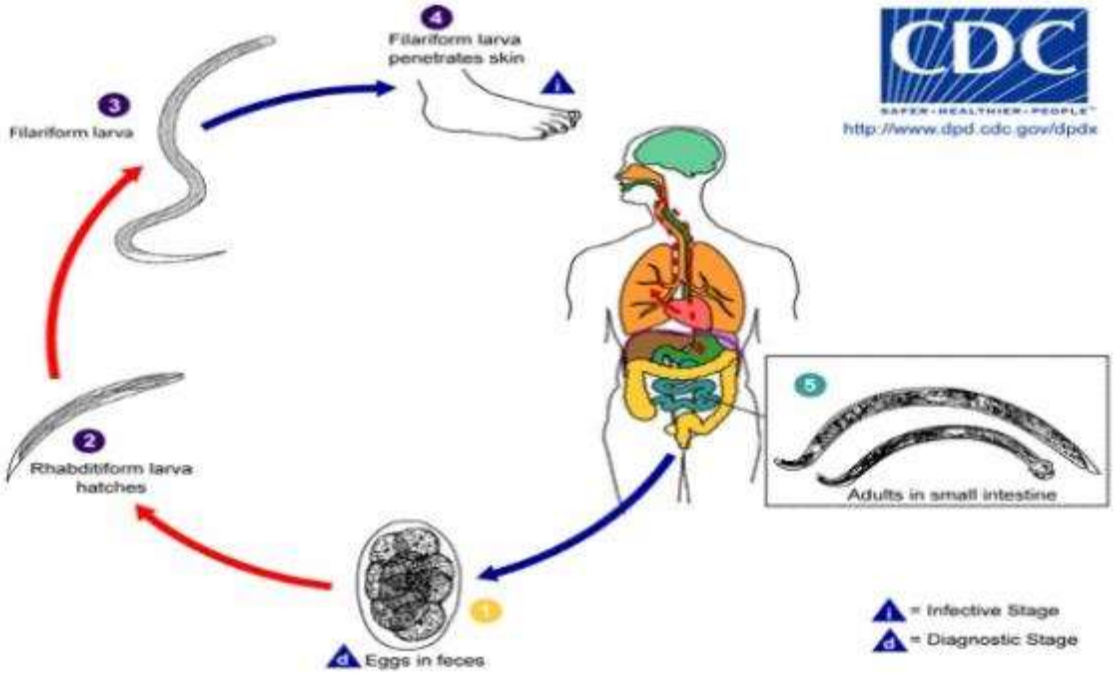
Fig. 9.20 Male and Female A. duodenale



- Rhabditiform larva of *Ancylostoma duodenale* 40x.
- The hookworm larvae are indistinguishable.



Life cycle


4
Filariform larva
penetrates skin
1
3
Filariform larva
CDC
SAFER·HEALTHIER·PEOPLE
http://www.dpd.cdc.gov/dpdx
5
Adults in small intestine
2
Rhabditiform larva
hatches
1
d
Eggs in feces
1 = Infective Stage
d = Diagnostic Stage

HOOKWORMS

Ancylostoma caninum, Ancylostoma braziliense,* and Ancylostoma tubaeforme**

Length of Life Cycle = 3 to 4 Weeks

* The life cycles for *A. tubaeforme* and *A. braziliense* are similar to that shown for *A. caninum*; *A. tubaeforme* is generally found only in cats; *A. caninum* and *A. braziliense* are found in both dogs and cats; larvae of *A. braziliense* and *A. caninum* may cause human cutaneous larva migrans and, rarely, eosinophilic enteritis.