



Trichinella



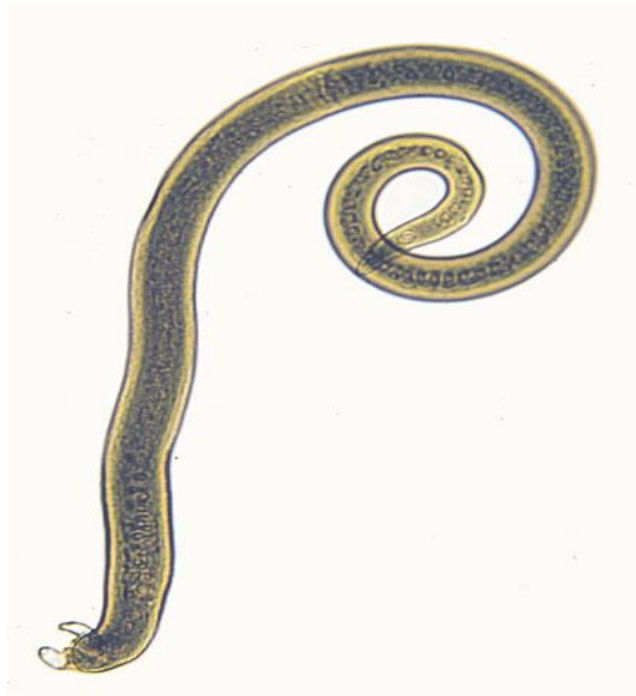
Dr. AJIT KUMAR
Department of Veterinary Parasitology
Bihar Veterinary College
Bihar Animal Sciences University
Patna-800014

Trichinella

Family : Trichinellidae

Species: *Trichinella spiralis*

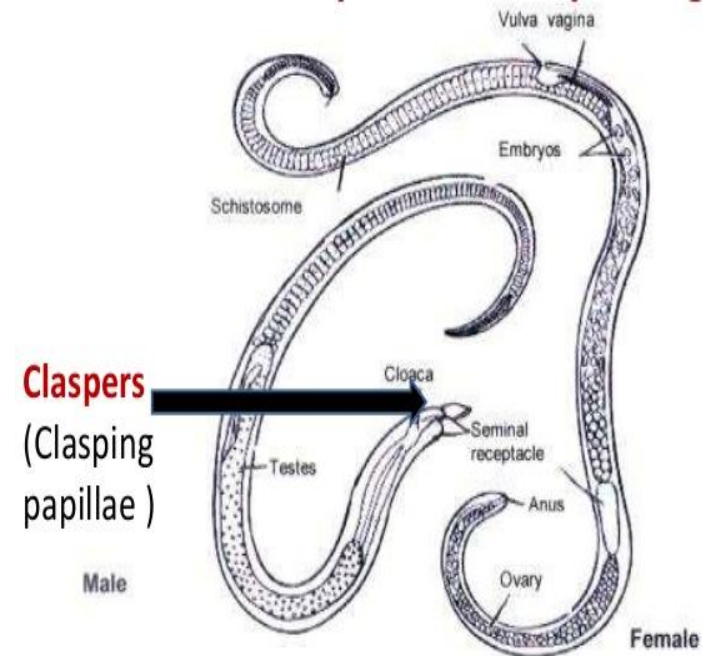
Sometimes referred to as the “Pork worm” due to it being found commonly in undercooked pork products.



Trichinella spiralis

Morphological Characters:

- male is 1.4-1.6 mm long whereas female worm is 3-4 mm long.
- Male has neither a copulatory spicule nor a spicule sheath.
- Female is larviparous.
- It is an Auto-heteroxenous parasite.
- *Trichinella* is most specialized species have no period of free existence at all.



Trichinella spiralis

- **Hosts** : Man, Pig, rat, dog & wild animals (Leopard, tiger, wild boar etc.)
- **Location**: Small Intestine
- Based on genetic, biochemical and biological variability, 9 valid species (*T. britovi*, *T. murrelli*, *T. nativa*, *T. nelsoni*, *T. papuae*, *T. patagoniensis*, *T. pseudospiralis*, *T. spiralis* and *T. zimbabwensis*) and 3 genotypes (*Trichinella* T6, T8 and T9) of the parasite have been recognized



Adult female in mucosa of small intestine

Trichinella spiralis

Life-cycle:

- 🕒 **Auto-heteroxenous parasite** (Same vertebrate animal acts as definitive and intermediate host of a parasite).
- **Infective stage: First Stage Larvae (L₁)**



1st stage larvae

Trichinella spiralis

Transmission:

Final host (pig) gets the infection -

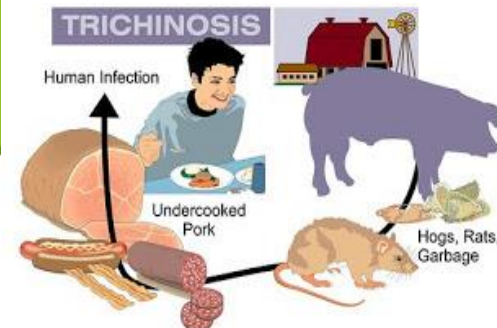
- ⌚ by ingestion of the muscle containing the first stage larvae (L_1) during predation or carrion feeding.
- ⌚ Man gets infection due to eating of raw or undercooked pork containing encapsulated L_1
- ⌚ Pig get infection by the ingestion of L_1 infected pork scraps or occasionally rats.
- ⌚ Rat is probably most highly infected natural host.



Predation or carrion feeding

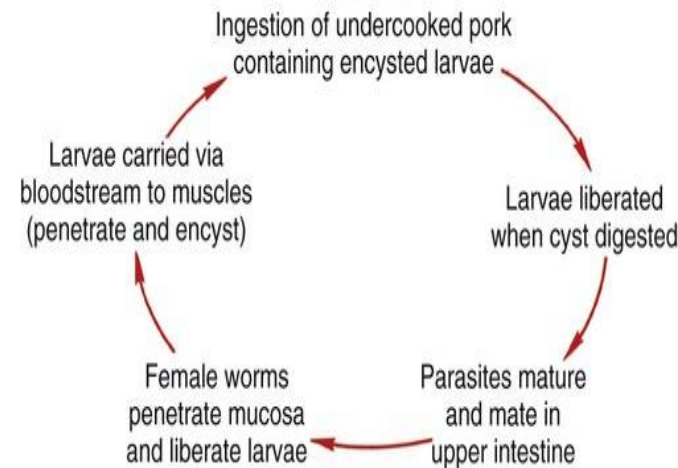
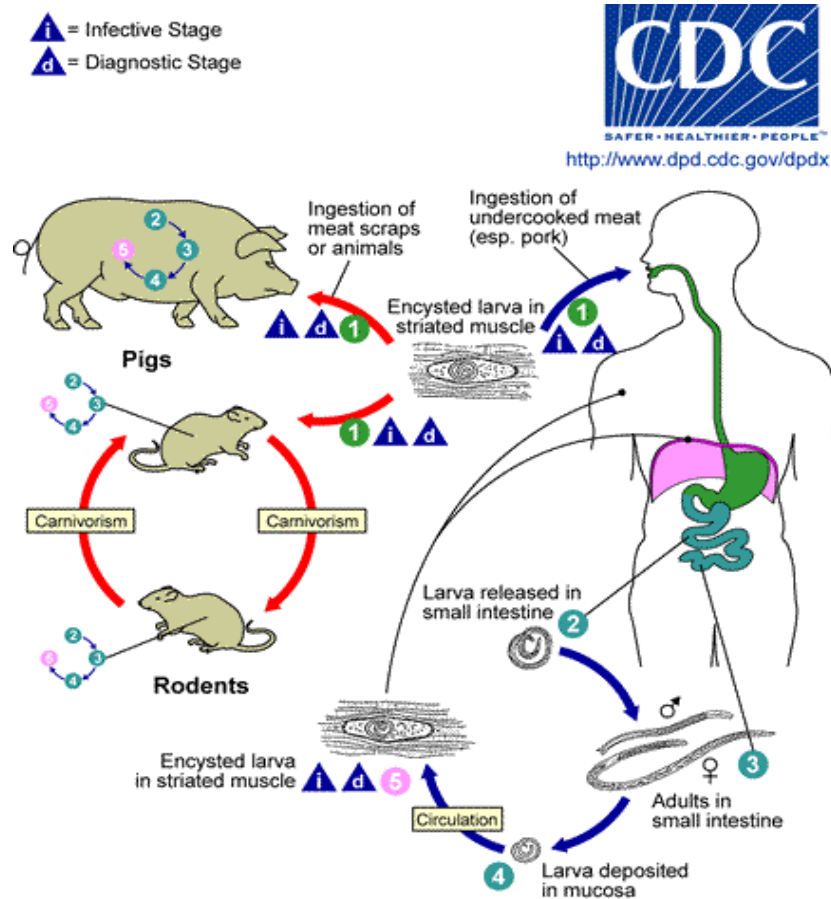


Eating of undercooked pork



Trichinella spiralis

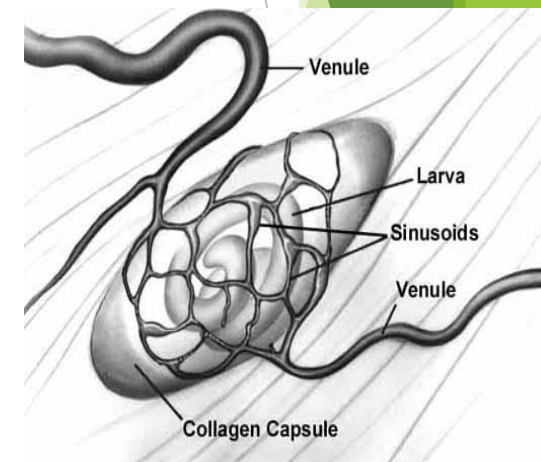
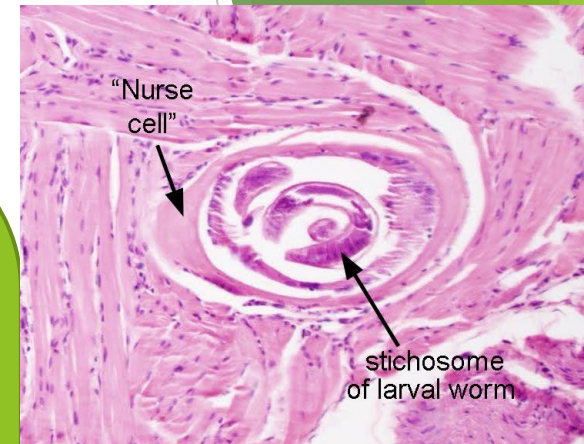
Life-cycle:



Trichinella spiralis

Life-cycle:

- ⌚ After copulation, the male parasite dies and the female parasite burrows the wall of intestine and lays L₁.
- ⌚ First stage larvae via blood reach to the striated (Skeletal) muscles where they are encapsulated by the host, grow and assume characteristic coiled position.
- ⌚ Parasitised cells are called nurse cell and is presumed to help larval nutrition and in the handling of waste products.



Nurse cell

Trichinella spiralis

Pathogenesis & Clinical signs:

- ⌚ **Caused Disease : Trichinellosis**
- ⌚ **Trichinellosis is a meat-borne helminthic zoonosis**
- ⌚ **Adult worms in small intestine cause enteritis leading to nausea, vomiting, diarrhoea, abdominal cramps etc.**
- ⌚ **Most pathogenic effect produces by the larvae in the muscle and cause acute myositis, fever, eosinophilia and myocarditis.**
- ⌚ **Periorbital oedema and ascites are also common in man.**
- ⌚ **Respiratory muscle involvement leads to respiratory distress in man**



Periorbital oedema



Haemorrhages in nail

Trichinella spiralis

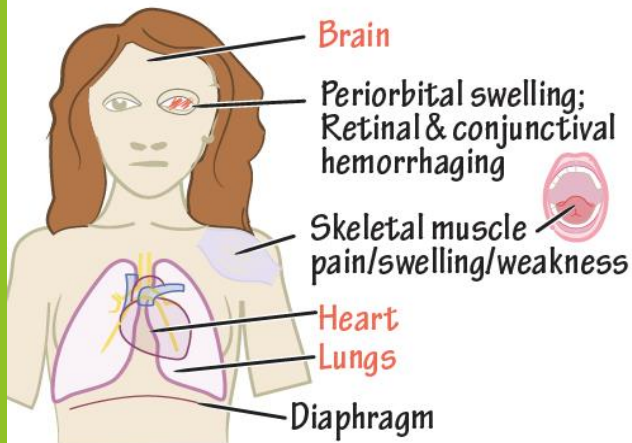
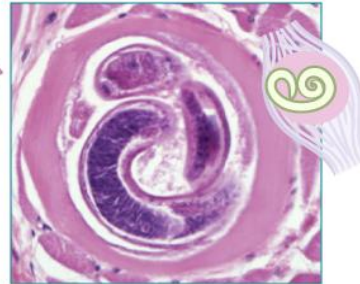
Pathogenesis & Clinical signs:

Trichinellosis (trichinosis)

Trichinella spiralis

- ✓ Larvae infect animals that eat flesh of other animals.
- ✓ Humans eat the meat (often pork), and larvae mature to adult forms.
- ✓ Adults reproduce, and larvae exit GI tract & migrate to striated muscles. Skeletal muscles - encyst and calcify.
- ✓ Symptoms depend on worm load and location:

Encysted larvae in muscle tissue.



Periorbital
oedema



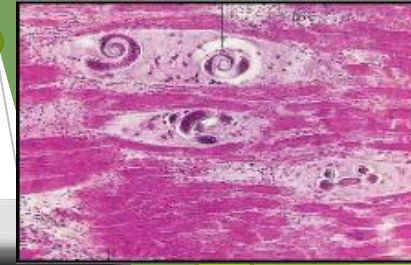
Haemorrhages in
nail

Trichinella spiralis

Diagnosis:

- ⌚ At meat inspection, heavy infections may be detected with the naked eyes as grayish white spots (Larvae of *Trichinella spiralis*).
- ⌚ Microscopic examination of small portions of muscle digested by pepsin/ HCl.
- ⌚ Trichinoscope instrument is also used in diagnosis of trichinellosis.
- ⌚ Out of various immunodiagnostic tests, the ELISA appears to be the test of choice.

Trichinoscope



Larvae

Trichinella spiralis

Treatment :

- ⌚ Benzimidazole anthelmintics are highly effective against adult worms and larvae in muscles.
- Thiabendazole @ 50 mg/kg b.wt. for 7days.
- Mebendazole @ 5 mg/kg b. wt. thrice a day for 3 days.



Trichinella spiralis

Control:

- ❖ Meat inspection to detect the encysted larvae
- 🕒 Proper cooking (58°C) or freezing (25°C for 10-20 days) of pork for destroying the encysted larvae.
- 🕒 Pigs or wild animals should be prevented from eating uncooked meat, scraps, or carcasses of any animals infected with *Trichinella*.
- 🕒 General awareness, regular deworming etc.



Meat inspection



Proper cooking of pork



**THANK
YOU**