Crimea state medical university

Trichinella Spiralis

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INTRODUCTION

- Classification of Trichinella Spiralis
- Geographical distribution
- Morphology
- Life cycle
- Phathogenecity
- Symptoms
- Diagonosis
- Control

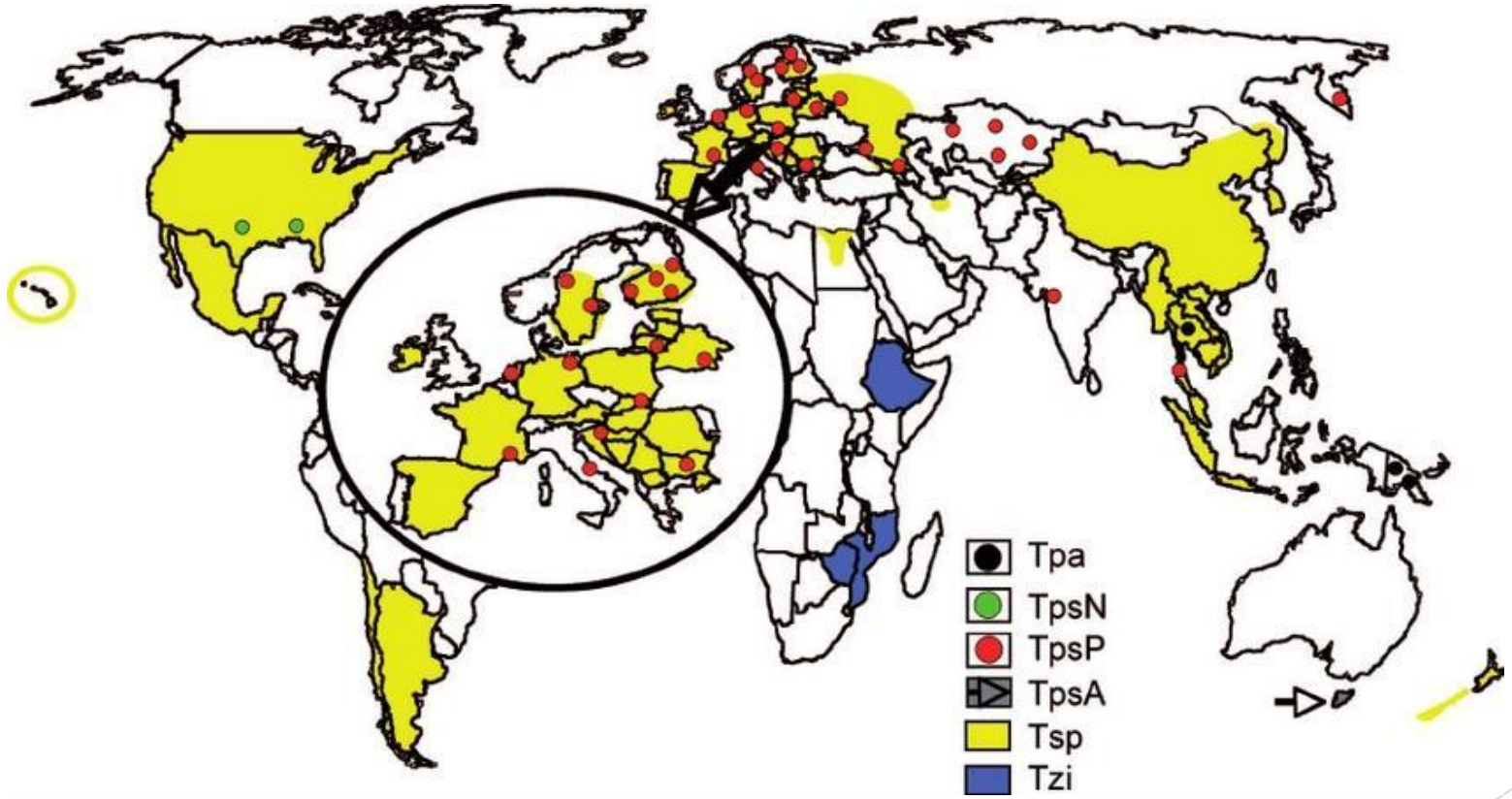
Classification of Trichinella spiralis

Scientific classification

- Kingdom:Animalia
- Phylum:Nematoda
- Class:Adenophorea
- Order:Trichurida
- Family:Trichinellidae
- Genus:*Trichinella*
- Species: ***spiralis***
- ***Name: Trichinella spiralis***

Geographical distribution

- **Geographical distribution**
- **Trichinella** is found on every continent except Antarctica. Most of the eight species have wide **geographic** and host **distribution**, a few of them are found only in specific areas and animals. Humans are susceptible to every species. The disease is less common in countries where pork is not eaten.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Morphology of Trichinella dpiralis

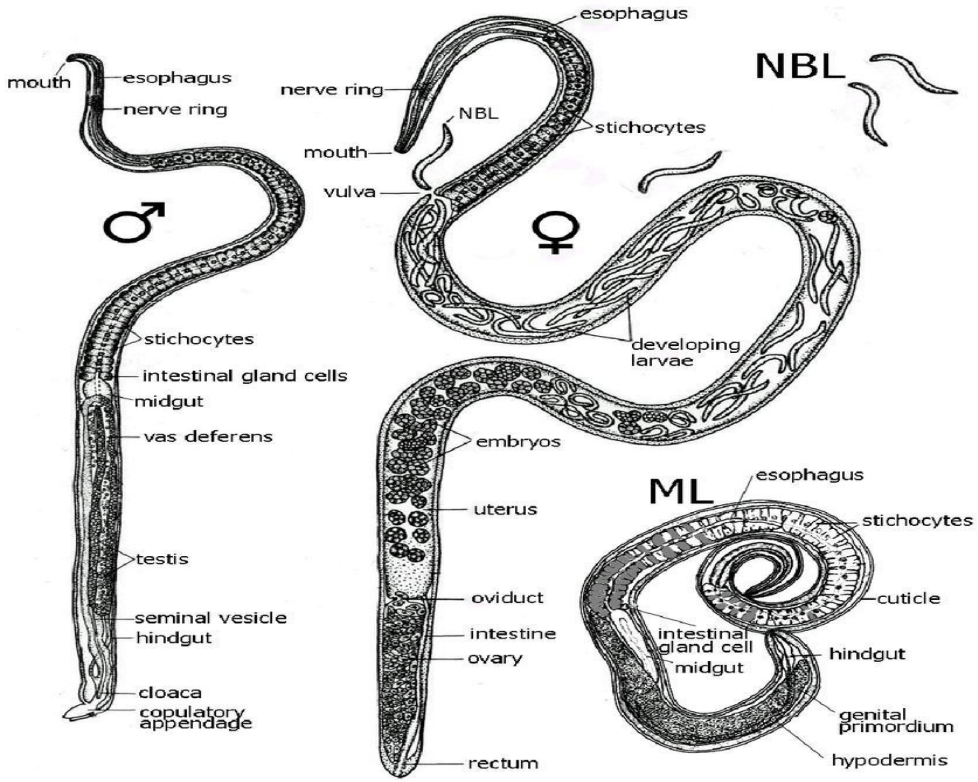
Morphology

- *T. spiralis* is white roundworm with an un-segmented body and is visible to naked eye and inhabit small intestinal. The adult male has a body size of 1.5mm by 0.04 mm, and adult females are 3mm by 0.06 mm with muscle larvae measuring about 1mm.

Morphology:

Adult female worm:
The anterior two-thirds of the body being very thin
(looks like a whip)
and the remaining posterior end is thick and linear.
Size: 3.5-5cm in length
Adult Male worm:
smaller than the female, 3.0-3.5cm.
The posterior end is curved and has a single spicule
enveloped with sheath.

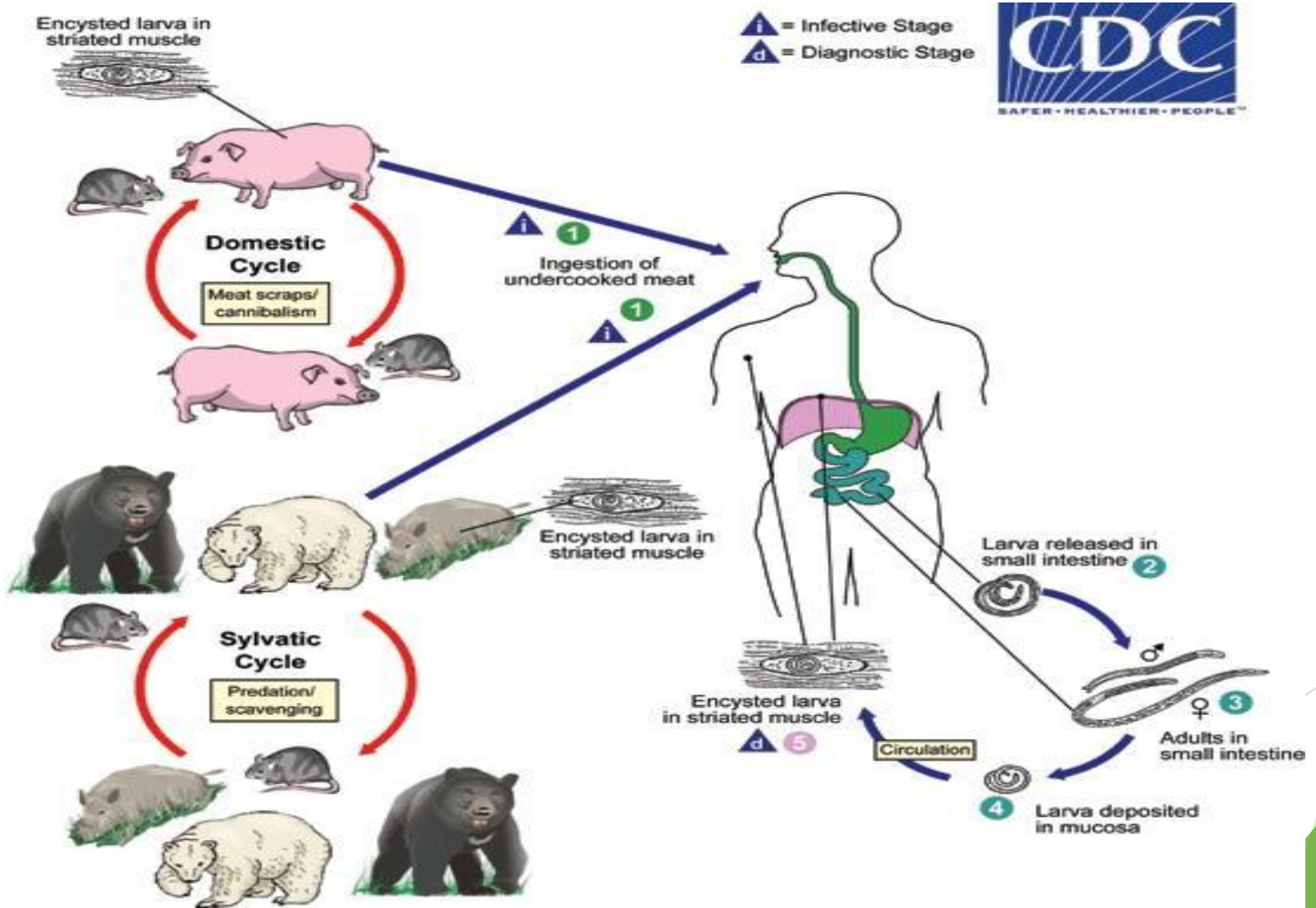
Morphology


mouth
esophagus
nerve ring
♂
stichocytes
intestinal gland cells
midgut
vas deferens
testis
seminal vesicle
hindgut
cloaca
copulatory appendage
esophagus
nerve ring
NBL
mouth
vulva
stichocytes
♀
developing larvae
embryos
uterus
oviduct
intestine
ovary
rectum
NBL
ML
esophagus
stichocytes
cuticle
intestinal gland cell
midgut
hindgut
genital primordium
hypodermis

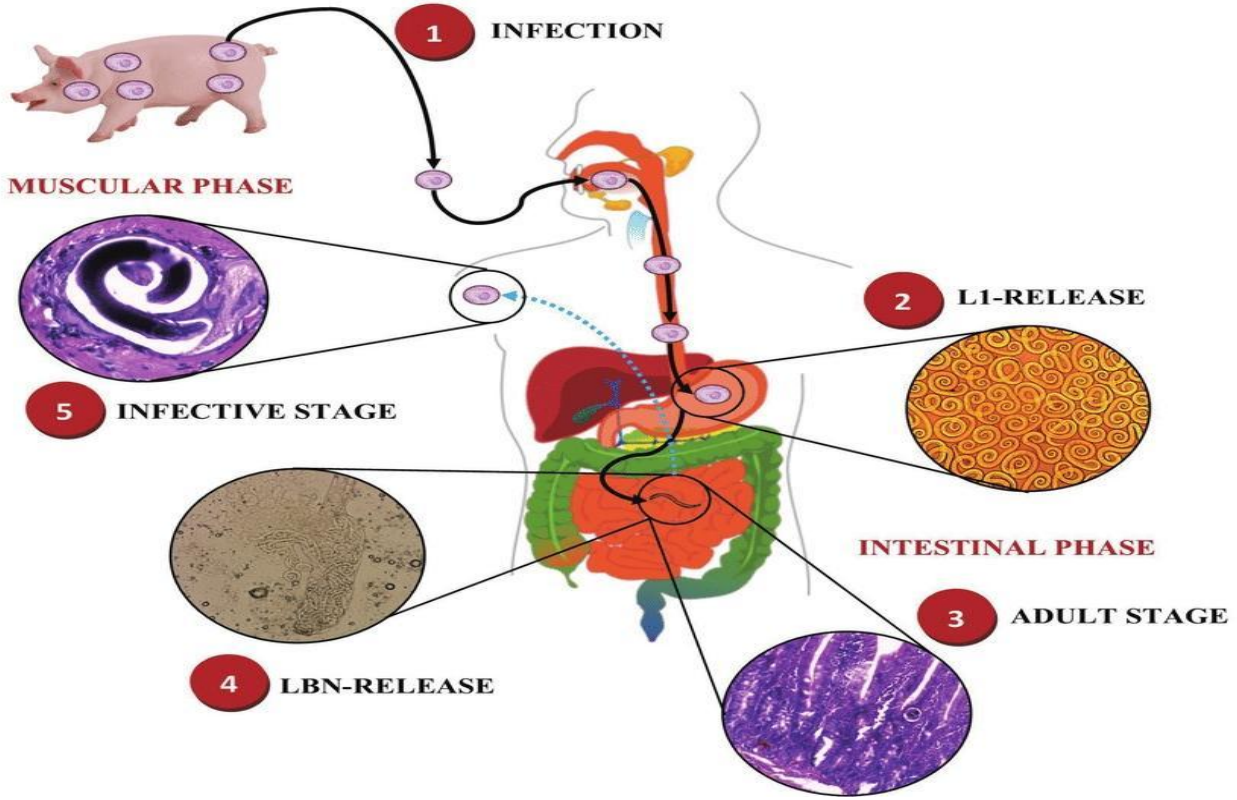
Life cycle of Trichinella spiralis

- To begin its **lifecycle**, T. **spiralis** adults invade the intestinal wall of a pig, and produce larvae that invade the pig's muscles. The larval forms are encapsulated as a small cystic structure within a muscle cell of the infected host.

Life cycle


Encysted larva in striated muscle
i = Infective Stage
d = Diagnostic Stage
CDC
SAFER·HEALTHIER·PEOPLE™
Domestic Cycle
Meat scraps/ cannibalism
i 1
Ingestion of undercooked meat
i 1
Encysted larva in striated muscle
Sylvatic Cycle
Predation/ scavenging
Larva released in small intestine 2
♂
♀ 3
Adults in small intestine
Encysted larva in striated muscle
d 5
Circulation
4
Larva deposited in mucosa

Life cycle


1 INFECTION
MUSCULAR PHASE
2 L1-RELEASE
5 INFECTIVE STAGE
INTESTINAL PHASE
3 ADULT STAGE
4 LBN-RELEASE

Phathogenecity

- Life Cycle & **Pathology of Trichinella spiralis**. < Infection occurs by ingesting encysted larvae in undercooked meat. < The larvae excyst and develop to adults in the small intestine. < Adults attach to the intestinal mucosa and being to release larvae in one week.

Pathogenesis

- Causes Trichinosis
- Three stages of pathogenesis:
  - Stage 1: penetration of adult females into the mucosa:
    - 12 hours – 2 days after infection
    - Low grade infection
    - Worms migration in intestinal epithelium causes:
      - Traumatic damage to the host tissues
      - Inflammation
      - Nausea, vomiting, diarrhea,
      - Sweating
      - Respiratory difficulties
      - Red skin blotches
    - Stage ends with facial edema and fever

Phathogenecity

Pathogenesis:

1--Penetration of the adult females into mucosa

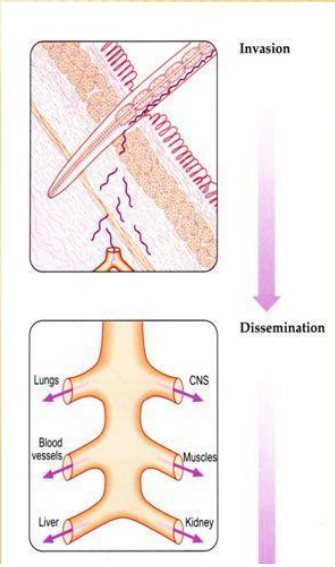
The first symptoms appear between 1- 2 days after ingestion.

The worms migrating in the intestinal epithelium

Inflammation of duodenal and jejunal mucosa:

This causes:

- inflammation,
- nausea,
- vomiting,
- sweating, and diarrhea.



Diagnosis

- **Trichinella** infections are most often **diagnosed** in the laboratory based on **detection** of antibodies to excretory/secretory **Trichinella** antigen by ELISA or IFA. Testing is rarely positive in early disease. IgG antibodies can be detected approximately 12 to 60 days postinfection.

Diagnosis

DIAGNOSIS

- Muscle biopsy is used for trichinosis detection.
- Several immunodiagnostic tests are also available;

  -Immunoassays, such as ELISA.

  -Serological tests include a blood test for eosinophilia, increased levels of creatine phosphokinase, IgG, and antibodies against newly hatched larvae.

Clinical feature s

Trichinella spiralis-Clinical features

- Second stage

Treatment of trichilla spiralis

TRICHINELLA SPIRALIS

- **Intestinal helminths, and other tissue Nematode**
- **Intestinal infection ,in which adult worms are found in the mucosa of the intestine and encysment of larvae are found in the muscle.**
- **Parasite of carnivorous mammals, especially common in rats and in swine fed uncooked.**
- **ONE SPECIES, *Trichinella spiralis*, IS A PARASITE OF MAN.**
- **ANOTHER SPECIESES :**
  - ***Trichinella nativa* (Kutub)**
  - ***Trichinella nelsoni* (Africa)**
  - ***Trichinella britovi* (Europe)**
  - ***Trichinella pseudospiralis***

Contol and prevention

- Infection by **Trichinella spiralis** is obtained by eating undercooked meat infected with larvae. Thus, cooking the meat (especially pork and bear meat) well to kill the infective larve will **prevent** one from acquiring an infection.

Good bye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