Lecture No.10 PARASITOLOGY DR.Raad H.H.

 **Order Enoplida**

Consists of **4** **Families** Trichinellidae ; Trichuridae ; Capillaridae Dictyophymidae**.**

**General characters**

1. General form very small size whip or **hairy worms**.
2. Female **oviparous** Trichinellidae; Trichuridae
3. **Esophagus** form cellular (**Stichosome** )
4. Male reproductive system No copoulatory bursa ; but have posterior **end with 1 spicule**.
5. **Egg barrel , lemon shape with 2 polar plugs structure with undivided embryo.**
6. Life cycle **Direct** (Trichuriidae) or **indirect** (Capillaridae)
7. Infective stage - **Eat** meat with **L1** or **Swallow** egg with **L1** or

**Swallow earth worm with L3.**

 **Family Trichinellidae**

**Characterized by :**

1. habitats **small intestine** mucosa of **mammals**, **Human** ,**pigs** and **rodents**.
2. genus **Trichinella** .
3. speices ***Trichinella******spiralis*** *.*
4. **zoonotic** nematode .
5. larvae **spiral** form contained in **cysts** in the **muscles**.
6. It causes a disease called **Trichinosis**.

 **Pathology and Immunology**:

Trichinella pathogenesis is due the **presence** of large numbers of **larvae** in vital **muscles** and host reaction to larval **metabolites**. The muscle fibers become enlarged **edematous** and **deformed**. The paralyzed muscles are **infiltrated** with **neutrophil**, **eosinophils** and **lymphocytes**. **Splenomegaly** is dependent on the degree of infection. The worm **induces** a strong **IgE** response which in association with **eosinophils** contributes to the parasite death.



**Life cycle** : Trichinosis is acquired by ingesting meat containing cysts (encysted larvae) (1) of Trichinella. After exposure to gastric acid and pepsin, the larvae are released (2) from the cysts and invade the small bowel mucosa where they develop into adult worms (3) (female 2.2 mm in length, males 1.2 mm; life span in the small bowel: 4 weeks). After 1 week, the females release larvae (4) that migrate to the striated muscles where they encyst (5). (***Trichinella pseudospiralis, however, does not encyst***). Encystment is completed in 4 to 5 weeks and the encysted larvae may remain viable for several years. Ingestion of the encysted larvae perpetuates the cycle. Ratsand rodents are primarily responsible for maintaining the endemicity of this infection. Carnivorous/omnivorous animals, such as pigs or bears, feed on infected rodents or meat from other animals. Different animal hosts are implicated in the life cycle of the different species of Trichinella. Humans are accidentally infected when eating improperly processed meat of these carnivorous animals (or eating food contaminated with such meat).

1. **Diagnosis**:
2. Symptoms .
3. Diagnosis is based on symptoms, recent history of eating raw or

undercooked meat .

1. laboratory findings (**eosinophilia**, increased serum creatine phosphokinase and lactate dehydrogenase and antibodies to *T. spiralis*).
2. **Biobsy** for microscopic exam .to find larvae under compression or digestion by ” **Trichinoscope**”.



 **Family Trichuridae**

Characterized by :

1. Genus **Trichuris**
2. **"Whipworm**" habitats **large intestine** of mammals.
3. It is so called since the **anterior** parts of the body is **long** and slender while the **posterior** part is **thicker** and much **shorter**.
4. ***Tricuris trichura*** in **human** ;***T. ovis*** in **sheep** in **cecum** of cattle sheep and goats



1. The **hind** end of **male** is curled and there is **one spicule** with a **protrusible sheath** which bears spines and a oblong swelling.
2. Eggs are barrel shaped with double plugs.
3. **Direct**- eggs hatch after being ingested by definitive host.



 **Family Capillaridae**

**Characterized by :**

1. **genus Capillaria**
2. habitats **large intestine of birds &mammals**
3. ***Capillaria bovis*** [Species](http://www.mondofacto.com/facts/dictionary?Species) occurring in the [**small intestine**](http://www.mondofacto.com/facts/dictionary?small+intestine) of [**cattle**](http://www.mondofacto.com/facts/dictionary?cattle), [sheep](http://www.mondofacto.com/facts/dictionary?sheep), and [goats](http://www.mondofacto.com/facts/dictionary?goats). **C**apillaria obsignata
4. The **above two species** belongs to a group of nematodes which are **closely** related to **Trichuris**, however, they are small and slender and the posterior part of the body is not conspicuously thicker than the anterior part.
5. The life cycle of species found in mammals is **direct** where as some of the life cycles of those found in **fowl** are **indirect**.
6. Eggs are double plugged.