

**PARASITOLOGY**


**Cestodes**

Lecture 2 of 2

**PARASITOLOGY**

Scheme of Lectures:

- Helminths
  - Total of Eight Lectures:
    - Platyhelminthes
      - Cestodes → 2 Lectures
        - *Taenia saginata* - Beef tapeworm **1**
        - *Taenia solium* - Pork tapeworm **2**
        - *Echinococcus granulosus* - Dog tapeworm
        - *Diphyllobothrium latum* - Fish tapeworm



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**Cestodes**

*Echinococcus granulosus*

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Introduction

- Common Name: Dog Tapeworm
- Disease:
  - Hydatid Cyst Disease
  - Cries: A drop of Water
- The adult worm:
  - Jejunum and duodenum of dogs and other canine carnivores like Wolves, Foxes, etc.
- The larval stage (hydatid cyst):
  - Humans and herbivore animals (sheep, goat, cattle and horse)
- Humans:
  - Accidental intermediate Dead End hosts
  - **May Live Up to 30 Yrs.!**

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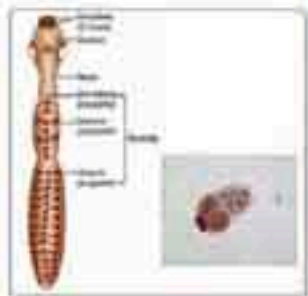
Morphology

- Adult Worm:
  - 3-6 mm in size
  - Smaller as compared to other tapeworms.
  - Scolex, a short neck, and strobila.

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Morphology

- Adult Worm:
  - Strobila:
    - Only 3 Proglottids
      - Immature (Proximal)
      - Mature (Middle)
      - Gravid (Distal)
  - Scolex:
    - Pear-shaped
    - 4 suckers
    - Rostrum with 2 jaws or hooklets





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**NEXT LECTURE:**

- Helminths
- Trematodes
- *Schistosoma*

Give your valuable feedback with  
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**DEPARTMENT OF  
PATHOLOGY**



**RAWALPINDI MEDICAL COLLEGE**



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### Diagnosis

- Imaging studies
- Serological Antigen - Antibody Detection
- Casoni's intradermal test
- Eosinophilia (20-25%)

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### Treatment

- Surgical resection/excision of Cysts
- Albendazole & Metronidazole
  - Either in combination or separately
  - Mostly useful post-operatively
  - Not curative
  - May be given for months to years or life long



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**Cestodes**  
**Diphyllobothrium latum**

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### Introduction

- Common Name: Fish Tapeworm
- Largest of Cestodes
  - Upto 45 meters long
- Infection from eating raw or undercooked fish
- Small intestine (ileum) in humans
- **May Live Upto 18 Yrs!**

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### Morphology

- Adult Worms
  - **Scolex**
    - Spatulate or spoon-shaped
    - 2-3 mm long and 1 mm broad
    - 2 slit like longitudinal sucking grooves (botha)
    - Lacks true suckers and heads
  - **Neck**



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### Morphology

- **Egg:**
  - Identical to Taenias.
  - No diagnostic significance

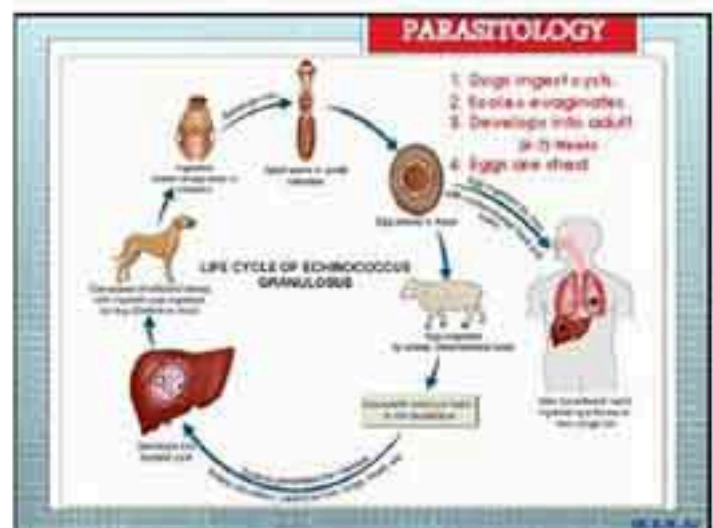
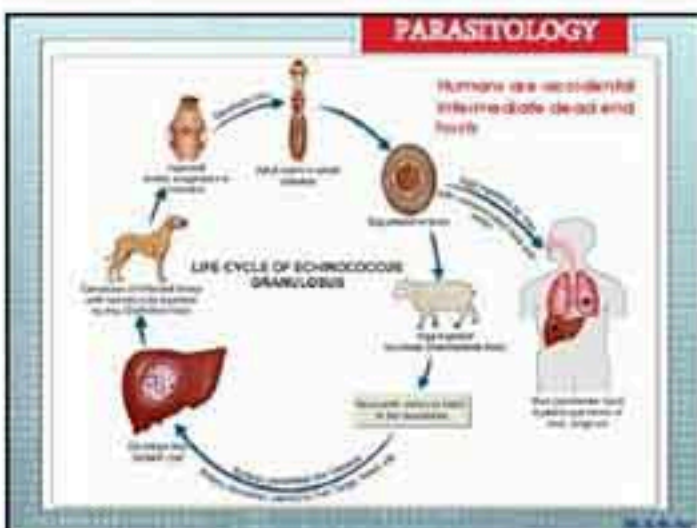
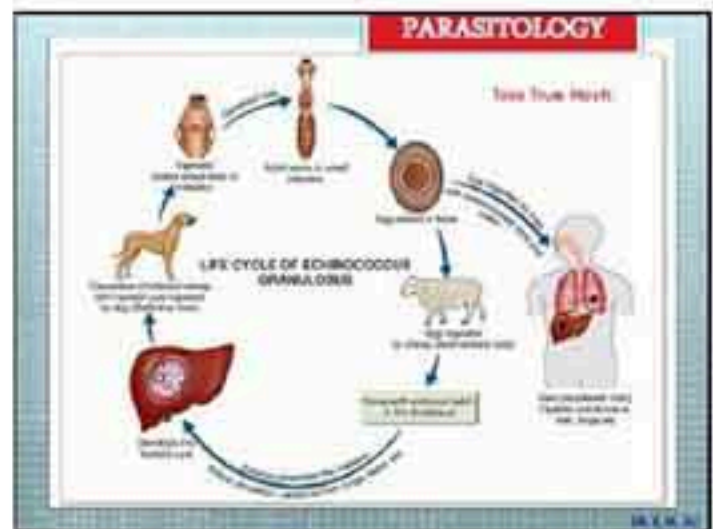
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### Morphology

- **Larval form:**
  - Found within the hydatid cyst developing inside vascular organs of the intermediate host
  - Represents the structure of the scolex of adult worm and remains **evaginated** within a vesicular body
  - After entering the definitive host or human body, the scolex with suckers and hooks, becomes **evaginated** and develops into adult worm

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## Clinical Features

- Asymptomatic to Mechanical Obstruction in advanced cases
- Abdominal discomfort
- Diarrhea
- Nausea
- Weight Loss
- Pernicious Anemia → Vit. B<sub>12</sub> Deficiency.

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## Diagnosis

- Stool Examination for
  - Eggs
  - Proglottids
- Coproantigen Detection Test
  - Usually not done as stool examination for eggs is sufficient

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## Treatment

- Single dose of Praziquantel
- 10 mg/kg body weight

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## Scenario

- A 30 year old male, having severe anemia and numbness of extremities presented in OPD. He is fond of Sushi for last many years. The stool examination shows large oval, thick walled eggs with an operculum at one end. What is your diagnosis.

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## Scenario

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Challenge...  
Interpret & Answer

- For Casoni's Test, how do we sterilize the Hydatid Fluid?



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### Morphology

- Adult Worm:
  - Strobila**
    - 3000-4000 proglottids
    - Hermaproditic
    - Slit-like ovary and a Rostellum like Uterus in the middle
    - Fertilized eggs are discharged



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### Morphology

- Egg:
  - Serious egg layer: Upto 1 million eggs per day!



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### Morphology

- Egg:
  - Ovoid
  - Thick brown shell
  - Operculum at one end and often a small knob at the other
  - The freshly passed egg contains an immature embryo surrounded by yolk granules
  - Not infective to humans




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### Morphology

- Larvae:
  - 3 larval stages
    - First stage larva: **CORACIDUM**
    - Second stage larva: **PROCERCID (PRO-CERCID)**
    - Third stage larva: **PIERCERCID (PIERO-CERCID)**

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### Life Cycle

- Definitive Host:**
  - Humans, Dog, Cat... Humans are the Best!
- Hosts for Larval Stages:**
  - Intermediate Host:**
    - First Stage Larva (Coracidium): Fresh water Copepod e.g. Cyclops
    - Second Stage Larva (Procercoid): Fresh water fish e.g. Salmon
  - Definitive Host:**
    - Third Stage Larva (Piercercoid): Infective to man

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