

DEPARTMENT OF VETERINARY PARASITOLOGY

TOPIC- CESTODE

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CESTODE

INTRODUCTION

- ▣ Cestus' – Tape like structure.
- ▣ Tapeworms are hermaphrodite.
- ▣ They are endoparasites, elongate and flat in nature. Few millimeter to several centimeter in length.
- ▣ Body cavity, digestive, respiratory and circulatory systems are absent.
- ▣ Saprozoic nutrition.
- ▣ Tape worms have 3 important parts,
 - Head or scolex
 - Neck
 - Body or strobila

MORPHOLOGY

Scolex

- ▣ Globular in shape, it has hold fast or adhesive organs is called as suckers in Eucestoda, where as in Cotyloda is known as 'Bothria'. Suckers are cup like structure, while bothria is longitudinal groove like structure.
- ▣ Scolex have a platform like structure is called as rostellum. It bears hooks or not if it has hooks known as 'armed rostellum'. Sometimes suckers also have hooks, they are known as armed suckers.

Neck

- ▣ Immediately following the head an unsegmented portion is called as neck.

Body

- ▣ A portion behind the neck region is called as body or strobila.
- ▣ Strobila consists of numbers of segments or proglottids, they are separated by transverse constriction. The genital organs are ill developed in first few segments they are known as immature segments. Mature segments have fully and functional genital organs. Each segment contains one or two sets of genital organ.
- ▣ *Eg. Raillietina* spp - Single set of genital organ. *Cotugnia digonopora* - Double set of genital organ.
- ▣ Generally the genital pore opens at the lateral aspect in Eucestoda but in cotyloda situated on ventral aspect. Posteriorly the segment packed with eggs is known as gravid segment. Only the cotylodan tapeworms have separate uterine pore so they lay the eggs singly.

- ▣ Where as in Eucestoda the gravid segments are detached and passed in the faeces of the host and the eggs are released due to disintegration of the gravid segment this process is known as ‘apolysis’.
- ▣ In some species after voiding the gravid segments move on the surface of faeces or bedding material or on the floor is called as “Anapolysis”.

Nervous System

- ▣ Central part of nervous system situated in the scolex from which nerve cords run posteriorly.

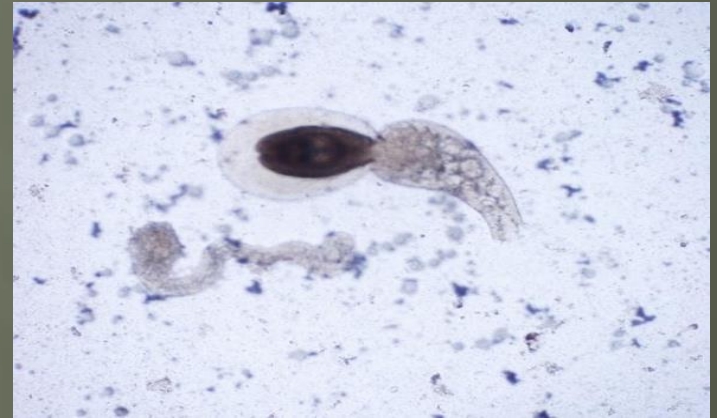
LIFE CYCLE

- ▣ Eggs are embryonated or unembryonated when laid. If the eggs are embryonated it
- ▣ contains oncosphere or hexacanth embryo. The oncosphere is bilaterally symmetrical and has 3 pairs of hooks.
- ▣ Eggs having 4 layers.
 - Outer capsule.
 - Outer envelope.
 - Inner envelope.
 - Oncosphere membrane.
- ▣ In Eucestoda the eggs are hatch out within the I/H (only after ingestion by I/H) and develops into larval stage. Where as in cotyloda eggs are hatch out in water and releases the larval stage is known as “Coracidium”.
- ▣ The larval stage of tapeworm is called as metacestode or bladder worm stage.

TYPES OF LARVAL TAPEWORMS OR BLADDER WORMS

Cysticercus

- ❑ Single invaginated scolex with cavity filled with fluid.
- ❑ Eg. *Cysticercus cellulosae* - larval stage of *Taenia solium*
- ❑ *Cysticercus bovis* - larval stage of *T. saginata*



Cysticercoid

- ❑ Single non-invaginated scolex with drawn into a small vesicle. Practically no cavity.
- ❑ Eg. Larval stage of ruminant and poultry tapeworm.



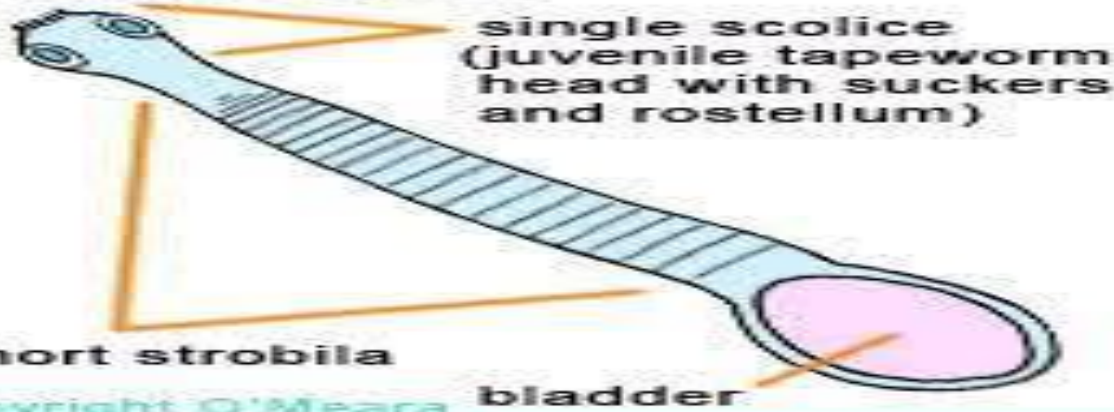
Strobilocercus

- ▣ A single scolex which is not invaginated when fully developed and attached with the bladder by a long neck.
- ▣ Eg. Larval stage of *T. taeniaeformis*.

Hydatid cyst

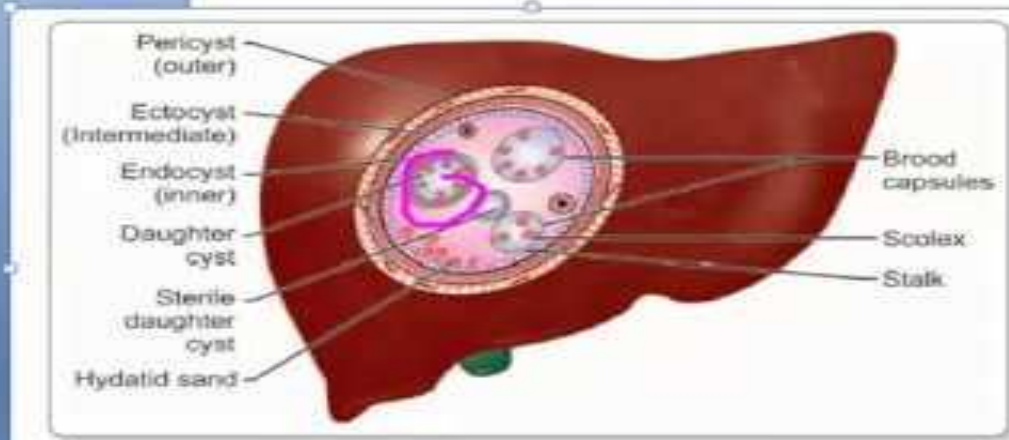
- ▣ Large fluid containing bladder it can produce daughter cyst is called as “Brood capsule” in which the scolices are develop. The mature brood capsule detached and float free in the fluid is called as “hydatid sand”.
- ▣ Eg. Larval stage of *Echinococcus granulosus*.

Strobilocercus



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Hydatid cyst - morphology



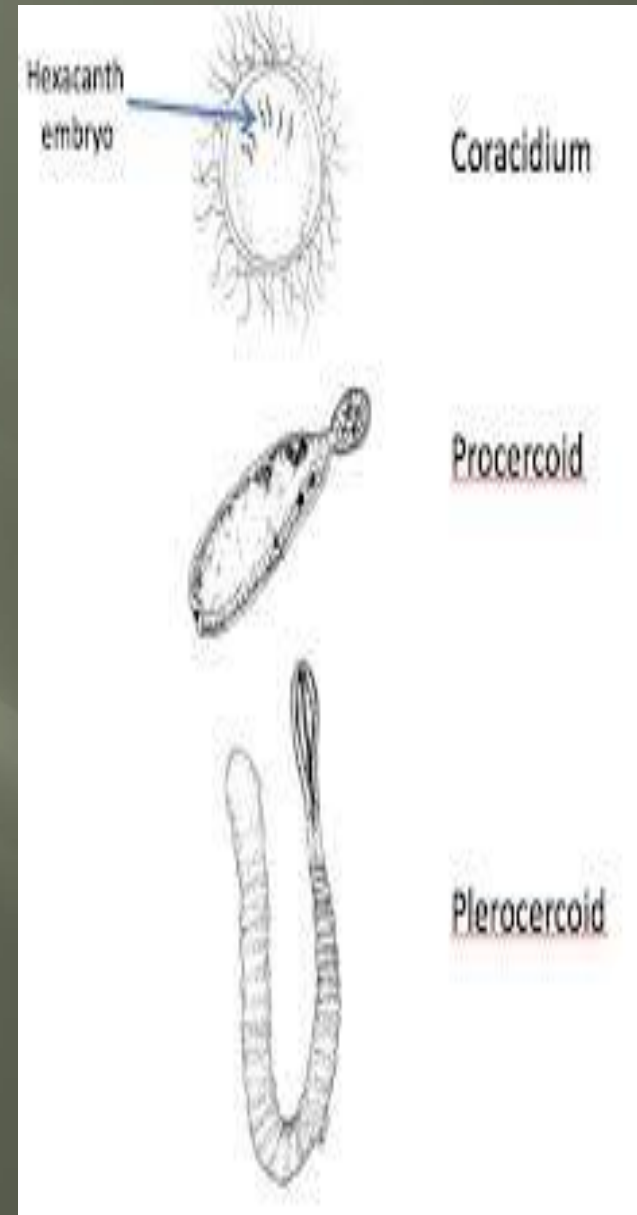
Hydatid cyst in the liver

Proceroid

- ▣ Is the larval stage of Cotylozan tapeworms which occurs in the first I/H.
- ▣ Proceroid is solid body and possess hooks on the posterior region.

Plerocercoid

- ▣ Is also larval stage of Cotylozan tapeworms which occurs in the 2nd I/H.
- ▣ It is elongated, solid and has a scolex like in adults.



Coenurus

- ▣ A large fluid containing bladder in which number of invaginated scolex attached to the wall.
- ▣ Eg. Larval stage of *T. multiceps*.


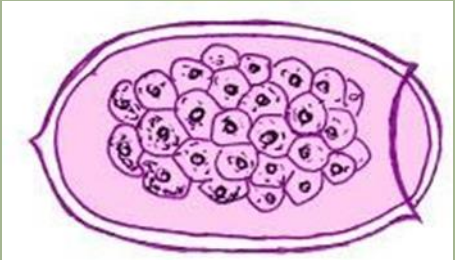


[Coenurus cyst from brain of a Sheep](#)

Tetrathyridium

- ▣ It is a larval stage of *Mesocestoides lineatus*. The body is elongate, solid and has a deeply invaginated Scolex.

EUCESTODA VS COTYLODA

Eucestoda	Cotyloda
Hold fast organ is known as suckers. Suckers may be armed or unarmed and 4 in numbers.	Hold fast organ is known as Bothria, two longitudinal weak muscular groove.
Segmentation is present.	Segmentation is absent.
Genital pore is present on the lateral aspect.	Genital pore is on ventral aspect.
Eggs are embryonated when laid and hatch out within I/H. eg. Taenid egg	Eggs are unembryonated, operculated and hatch out in the water eg. Diphyllbothrium latum egg
	
It requires only one I/H	It requires two I/H.
Apolysis is present.	Apolysis is absent.

THANK YOU