

Family: Taeniidae

The largest cyclophyllideans are in the family Taeniidae and are the most medically important tapeworms of humans. Most tapeworms in this family are large parasites of mammals, although some species found in birds.

1- Genus: *Taenia* :

a- *Taenia saginata*

b- *Taenia solium*

c- *Taenia hydatigena*

d- *Taenia multiceps*

2- Genus: *Echinococcus* :

a- *Echinococcus granulosus*

b- *Echinococcus multilocularis*

Genus : *Taenia saginata*.

Called beef tapeworm

Definitive (Final) host: humans

Intermediate host: cattle

Humans are infected by eating raw or undercooked beef containing larval stage called *Cysticercus bovis*.

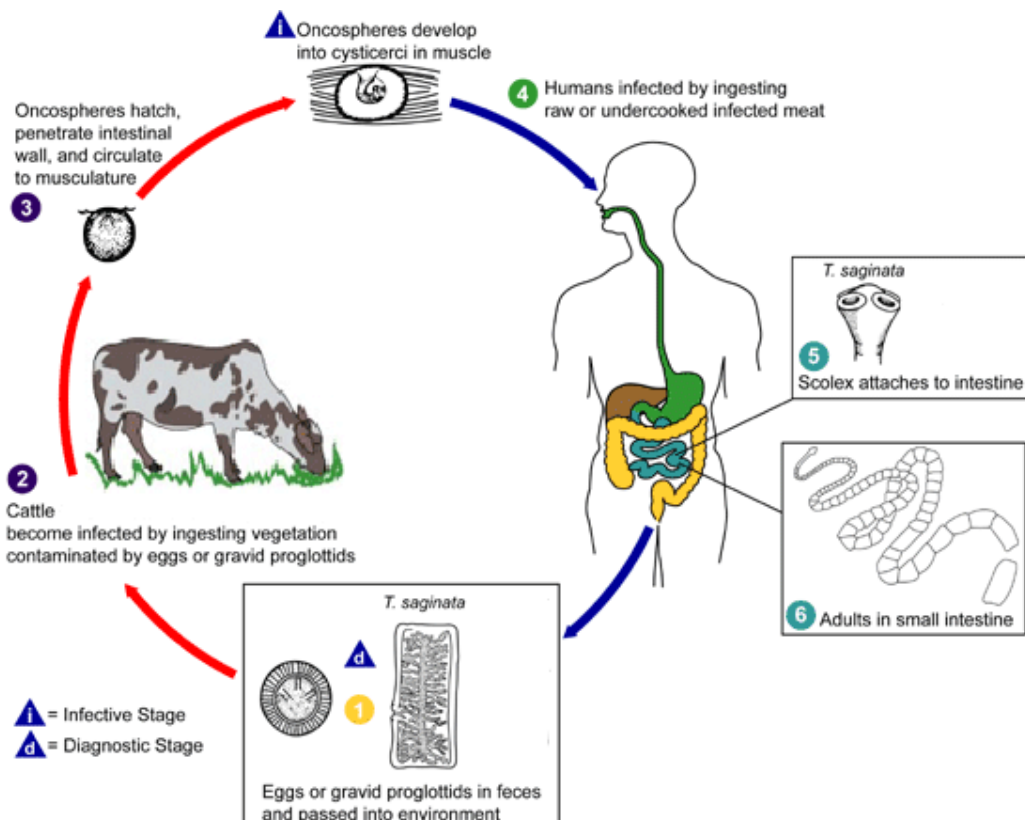
Morphology:

- 1- large species reaching up to 20 m can be identified by its scolex with 4 suckers without hooklets.
- 2- Each worm may have 1,000 to 2,000 proglottids.
- 3- Mature proglottid contains 300-400 scattered testes and ovary with two lobes.
- 4- Gravid proglottids contain 17-35 primary uterine branches filled with (80,000 to 100,000) eggs per each.
- 5- Gravid proglottids: detached single with creeping properties.
- 6- Larvae: *Cysticercus bovis*. (bladder worm): a bladder-like structure with an invaginated scolex with four suckers. It measures about 12 cm.

- 7- Egg The eggs are rounded or sub spherical, diameter 31 – 43 μm, with a thick radially striated brown shell. Inside each shell is an embryonated oncosphere with 6 hooks (hexacanth embryo, oncospheres) (same as all Taeniidae)

Life cycle:

- 1- The adult lives in the upper part of the small intestine of man.
- 2- Mature eggs and gravid segments pass in the feces. Gravid segments are detached separately and disintegrate liberating eggs. Sometimes these segments creep out of the anus by their activity,
- 3- When the eggs or gravid segments are ingested by the intermediate host (cattle) the onosphere hatches, penetrates through the intestinal wall into the lymphatics or blood vessels to the right side of the heart to the lung to the systemic circulation where it is distributed everywhere especially in active muscles, brain, bones, etc... There it develops into *Cysticercus bovis*.
- 4- The final host (man) infected by ingestion of undercooked beef containing viable *Cysticercous bovis* (the infective stage). In the intestine, the evaginated scolex attaches to the mucosa and the worm develops to maturity in about 10 weeks.



Genus: *Taenia Solium*

Called Pork tapeworm

Definitive host: humans

Intermediate host: Pigs or humans

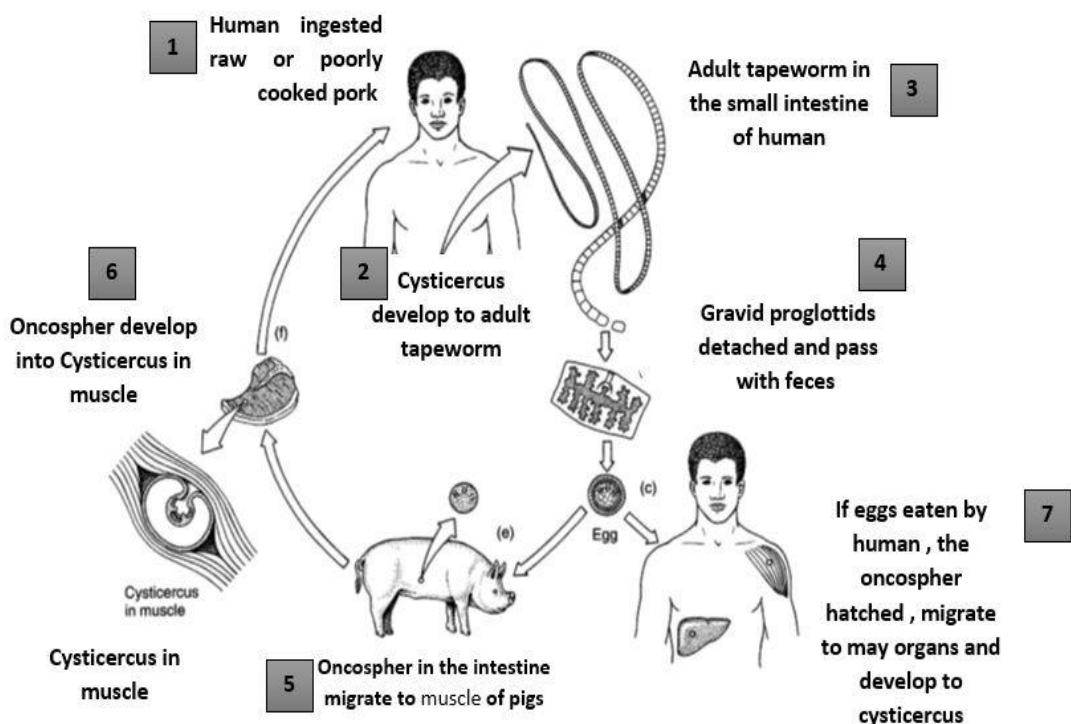
Humans can be infected by:

- 1- Eating raw or undercooked pork containing larval stage called *Cysticercus cellulosae*
- 2- Ingested the eggs by autoinfection.

Morphology

- 1- Adult: can be identified by its scolex with 4 suckers and circle of hooks (armed scolex) and may parasite reach 2-7 meter and strobila contain 800-900 proglottids.
- 2- Mature proglottid has 150-200 testes and three lobulated ovaries.
- 3- Gravid proglottid contains uterus with 7-12 primary branches filled with 40000 eggs.
- 4- Gravid proglottids: detached in a chain of 3-4 proglottids without creeping properties.
- 5- Larval stage: *Cysticercus cellulosae*: consist of a pea-sized fluid-filled bladder with an invaginated scolex.
- 6- Eggs: Taeniidae like eggs

Life cycle :



Pathogenicity:

- 1- Intestinal disturbances as hunger pains, indigestion, abdominal discomfort, diarrhea, or constipation.
- 2- Loss of weight, Intestinal obstruction.
- 3- Segments of *Taenia saginata* migrating out of the anus cause worry and anxiety.
- 4- Eosinophilia.

Diagnosis;

- 1- Finding eggs in the feces.
- 2- Searching for gravid proglottids in the feces (numbers of uterine branches to identify *T.saginata* from *T. solium*.)
- 3- Diagnosis of cysticercosis in human (CT scan)
- 4- Serological tests.

Treatment:

Final host : Praziquantel (5-10 mg/kg, single-administration)
Niclosamide (2 mg / single dose).

Intermediate host: No treatment

Prevention and Control;

- 1- Prevention of contamination of areas where cattle and pigs graze with human feces.
- 2- Inspection of beef and pork for cysticerci at slaughterhouses. Infected carcasses are condemned.
- 3- Cooking of meat (at least 56°C for 5 min) or freezing at 10° C for 5 to 10 days. Avoid suspected underdone meat (grilled or pickled).
- 4- Human feces should not be used as manure.
- 5- Avoid eating raw vegetables.

		<i>T.saginata</i>	<i>T. solium</i>
Adult	Size	6-10 m.	4-7 m.
	Scolex	No rostellum or hooks	No rostellum and hooks present
	Mature segment	300-400 testes, two lobulated ovary	150-200 testes, ovary with three lobes
	Gravid segment	1-Uterus with 17-35 branches. 2- Gravid segment detached singly with creeping properties	1-Uterus with 7-12 branches. 2-Gravid segment detached a chain without creeping properties
Final host		Human	Human
Intermediate host		Cattle	Pigs, humans
Larval stage		<i>Cysticercus bovis</i>	<i>Cysticercus cellulosae</i>