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Parasitology

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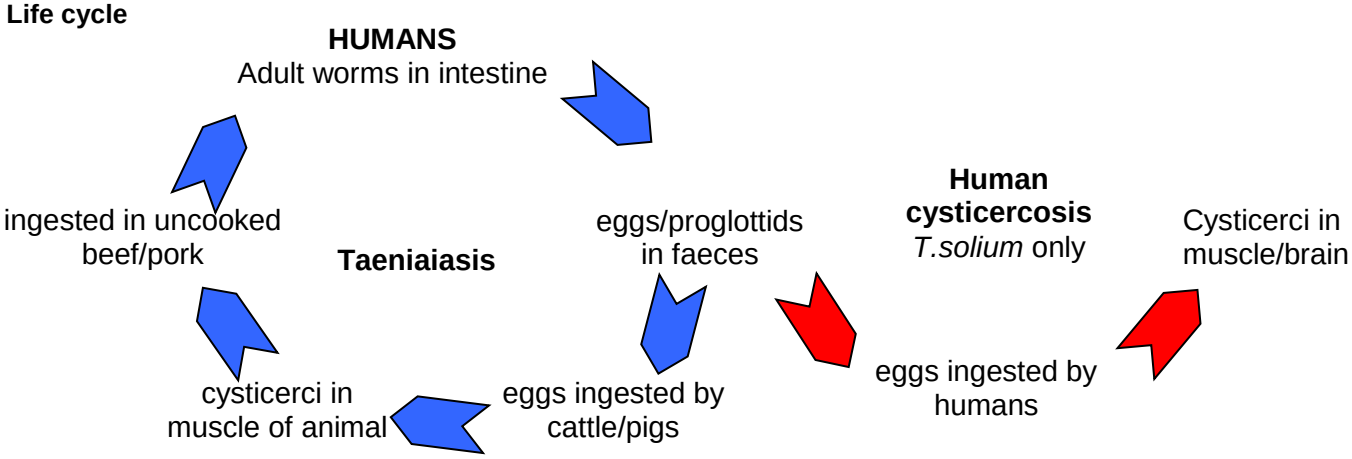
Taenia species

Introduction

Taenia species are the most common cestode parasites of humans. More than 60 million people are infected with *T. saginata* world wide and about 4 million are infected with *T. solium.*

Life cycle



Both humans and cattle or pigs are necessary to the complete life cycle of *Taenia* species. The eggs containing an onchosphere are ingested by the intermediate hosts . The onchosphere hatches out in the duodenum , passes into the intestine where it penetrates the intestinal wall and is carried by the circulation and deposited in the tissues, usually muscle. There it develops into a cysticercus larva which is white and ovoid, measuring approximately 8x5mm.

Humans become infected by ingesting inadequately cooked beef or pork with cysticerci containing an invaginated protoscolex. The protoscolex evaginates and passes into the small intestine where it attatches to the mucosa and develops into an adult worm.

Eggs and proglottids are passed out in the faeces, are eaten by the intermediate host thus perpetuating the life cycle.

Pathogenesis

The presence of the adult worm rarely causes symptoms apart from slight abdominal irritation with diarrhoea, constipation or indigestion.

The accidental ingestion of the embryonated ova of *Taenia solium* may result in cysticercosis in man.

T. saginata (the **BEEF** tapeworm) does **NOT** cause human cycticercosis. When the embryonated eggs are ingested, the embryos hatch out, migrate through the intestinal wall and are carried around the body in the circulation and deposited in various tissues. Muscle and subcutaneous tissues are usually infected, but cysticerci can infect most organs and tissues. Human cycticercosis is usually asymptomatic unless the

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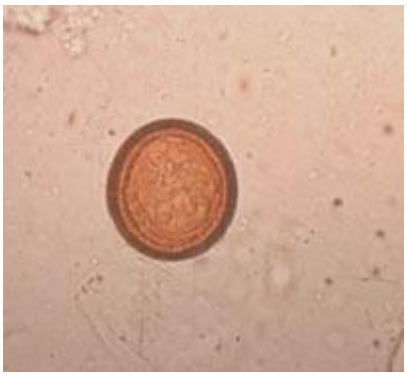
infection is particularly heavy or cysticerci are formed in some vital area eg. the brain, resulting in neurological sequelae.

Laboratory diagnosis

A diagnosis of intestinal taeniasis can be made by recovery of the characteristic ova in the stool. Ova of *Taenia* species are spherical, yellowish brown and measure 31 - 43μ in diameter. The shell is thick and radially striated. Within the shell, the onchospere has 3 pairs of hooklets. However, the microscopical appearance of the ova of *T. saginata* and *T. solium* are identical, thus definitive diagnosis can only be made by the recovery of gravid proglottids in the faeces. The proglottids of *Taenia* species can be identified by the number of uterine branches; 7 - 13 for *T. solium* and 15 - 20 for *T. saginata*. If the scolex is recovered, the 4 suckers and rostellum of hooklets of *T. solium* will distinguish it from *T. saginata* which has 4 suckers but no hooklets.

The diagnosis of cysticercosis depends upon serology. MRI scans may reveal the presence of lesions in the brain. Occasionally, the diagnosis is made histologically on surgical specimens.



An ovum of *Taenia* species

Epidemiology and prevention

Prevention involves the use of good sanitary techniques, personal hygiene measures and adequate cooking of beef and pork products.

Differential features of adult *T. solium* and *T. saginata*

Characteristics	***Taenia saginata***	***Taenia solium***
Intermediate host	Cattle	Pigs
Mode of infection	Ingestion of cysticerci in infected beef	Ingestion of cysticerci in infected pork
Length of adult	4 - 8 metres	3 - 5 metres
Morphology of scolex	4 suckers	4 suckers and a rostellum of hooks
Proglottids	15 - 20 uterine branches	7 - 13 uterine branches
Means of diagnosis	recovery of eggs, proglottids and scolex in the faeces	recovery of eggs, proglottids and scolex in the faeces
World wide distribution	Cosmopolitan, predominantly in Africa	Cosmopolitan, predominantly in South America

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