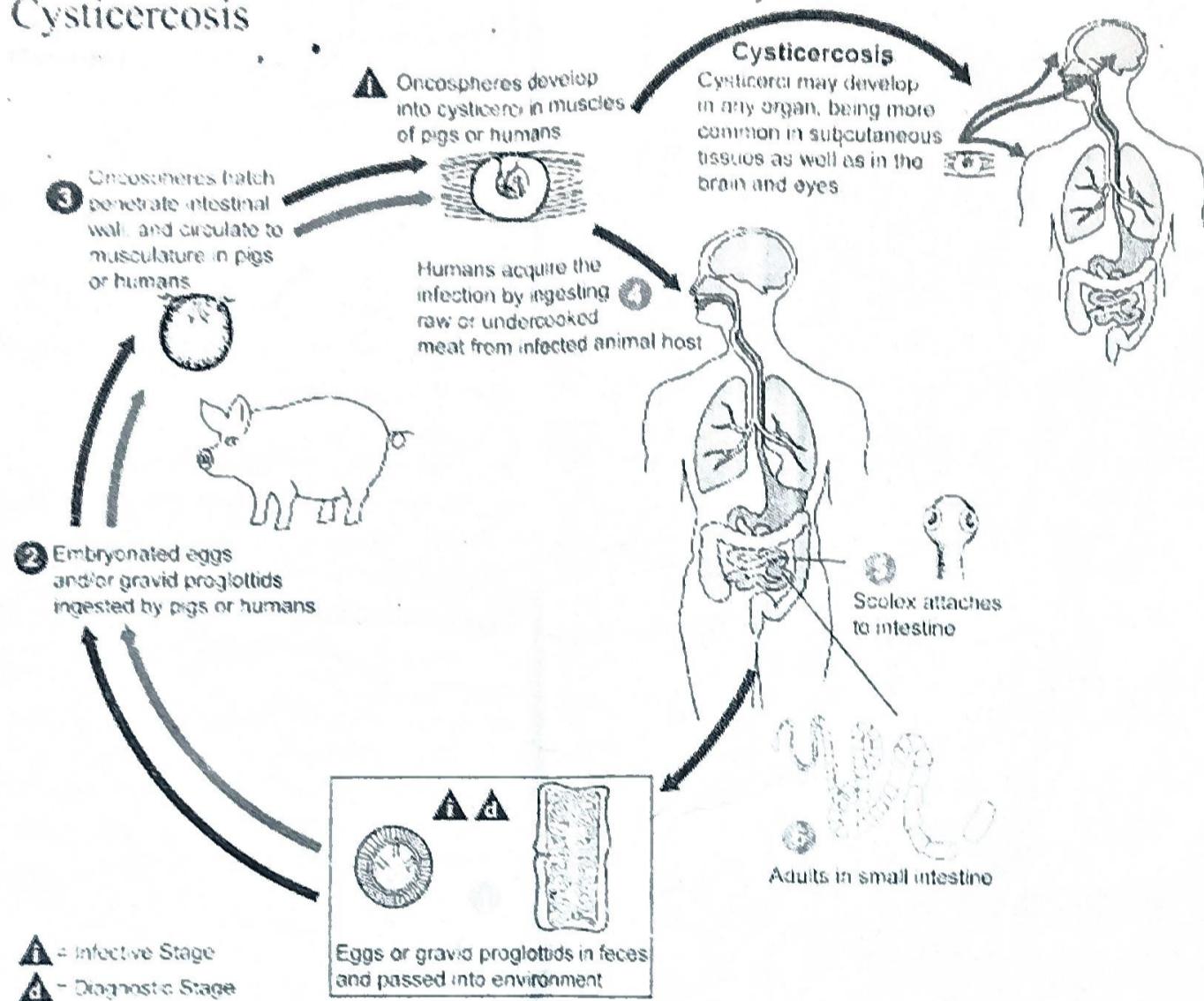


## Life cycle of *Taenia solium*:

- The life cycle is completed in two hosts.
- Definitive host: Human
- Intermediate Hosts: Pig, occasionally human.

## Cysticercosis



- Humans acquire infection by ingestion of inadequately or improperly cooked pork infected with cysticerci.
- Inside the alimentary canal of man the scolex on coming in contact with bile exvaginates and anchor to the gut wall with its hooks and suckers.
- The larvae develops into an adult worm by gradual strobilisation.
- The worm grows to sexual maturity in 2-3 months and start producing eggs which are then passes in the faeces along with the gravid segments.
- The pig gets infection by ingestion of eggs or gravid proglottids passed in human faeces.
- In the intestine of pig, the oncospheres hatch out of eggs.
- They attach to the intestinal mucosa by hooks, penetrate the gut-wall and gain entrance into the portal vessels or mesenteric lymphatic, finally reaching the systematic circulation.
- Usually they travel via the portal vein and successively reach the liver, right side of heart, lungs, left side of heart, brain or other tissue with high blood flow.
- The naked oncospheres are filtered out from the circulating blood into the muscular tissue where they ultimately settle down and undergo further development.

- They lose their hooklets, enlarge, and develops into a fluid-filled cyst within a period of 9-10 weeks.
- They remain viable for up to 8 weeks in muscle of pig during which they remain infective for human.
- The new host gets infection by ingestion of the infected meat of pig and the cycle is repeated.
- Occasionally humans get infection by eating food or drinking water contaminated with eggs.
- On ingestion, the oncospheres are released from the eggs in the intestine. These larva invade the intestinal mucosa and are then carried by the circulation to different tissue where they develops into cysts.
- In human most cysts are produced in the CNS, skeletal muscles, eye and subcutaneous tissue giving rise to a condition called **cysticercosis**.

### Mode of transmission:

- Ingestion of uncooked pork infected with tape worm
- Ingestion of food and water contaminated by the eggs present in the infective faeces of a *Taenia* carrier.
- Endogenous auto infection: Anus-hand-mouth transfer of eggs by contaminated hands of person with poor personal hygiene.
- Autoinfection: Reverse peristalsis in which eggs produced by *T. solium* are thrown back to the duodenum, where they hatch and cause tissue infection

### Pathogenesis of *Taenia solium*:

- Both adult worm and cyst are pathogenic. The adult worms are less pathogenic. They occasionally cause mild irritation or inflammation of the intestinal mucosa by their armed scolex.
- The cyst, (**Cysticercus cellulosae**) are more pathogenic. They cause a serious disease cysticercosis in human, mostly cyst are produced in the skin, skeletal muscles, eye and CNS.
- The cyst can remain viable for few years.
- In the brain the cyst survives by overcoming the host defenses. It secretes the prostaglandins and other substances that inhibit activation of the complement and production of cytokines. This result in minimal host inflammation around the live cysticercus. The live cyst is surrounded by a local minimal cellular reaction that consists of few eosinophiles and macrophages.
- The dead cyst is surrounded by a dense infiltration that consists entire spectrum of inflammatory cells, including leucocytes and multinucleated giant macrophages, inflammatory cells and less frequently foreign body giant cells. Outside this area a zone of fibrosis and chronic inflammatory infiltration are present.

### Clinical diseases caused by *Taenia solium* infection

#### 1. Intestinal Taeniasis:

- Mostly the infection is asymptomatic.
- In symptomatic cases, the clinical symptoms are nonspecific and mild and includes- nausea, abdominal discomfort, hunger pain, loss of weight, chronic indigestion etc.
- Less frequently nausea, vomiting, headache and diarrhea are present in few cases.

## 2. Cysticercosis:

- Cysticercosis is the infection with the larval stage of the parasite.
- Human beings acquire infection through faecal oral contamination with *T. solium* eggs from tapeworm carriers or by auto infection.
- Clinical manifestation depend on the affected organ; neurocysticercosis and ophthalmic cysticercosis are associated with substantial morbidity.