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## ECHINOCOCCOSIS



This disease  
is known to  
occur in  
Afghanistan.



### 1. Definition

Echinococcosis (hydatid disease) is a parasitic infection caused by the intermediate stage of the *Echinococcus* tapeworm.

### 2. Etiology

Echinococcosis is caused by *Echinococcus granulosus*, a tiny cestode parasite in the family Taeniidae. The parasite has an indirect life cycle, and must develop in both an intermediate host (sheep, goats, cattle) and a definitive host (dogs).

### 3. Transmission

The definite host for *E. granulosus*, mainly canids, becomes infected when they ingest cysts in the tissue of the intermediate host (sheep, goats, cattle). The cysts develop into tapeworms, which mature in the canid small intestine. Eggs are shed in the canid feces and remain viable for several months in the pasture or gardens. When an intermediate host such as a sheep, goat, or cow, ingests them, the eggs develop into larvae and these larvae are carried out to different organs and develop cysts most frequently in liver and less frequently in the lungs.

### 4. Species affected

The main animals affected by disease are sheep, goats, cattle, buffalo, and camels. Humans can also develop cysts in the organs such as liver, kidney, and brain when they ingest tapeworm eggs from the definitive

hosts. The eggs may be found on foods such as vegetables, fruits or herbs, or contaminated water. The dog-sheep cycle is most likely to result in human infections.

***Echinococcosis is a serious zoonosis!***

### **5. Clinical signs**

Incubation period is prolonged. Clinical signs are only seen in the intermediate host and often the infestation is subclinical, with asymptomatic cysts found incidentally at slaughter. Most cysts are found in the liver and lungs, but they may also be found in other organs. When the cysts are large enough, they produce symptoms such as hepatic disorder, ascites and jaundice, as well as bronchopneumonia, heart failure, decreased growth, and weakness.

### **6. Pathologic findings**

In the intermediate hosts, cysts are usually individual, fluid-filled, and surrounded by a fibrous wall. Most are 1-7 cm in diameter, but some cysts may reach 20 cm. Some cysts become calcified, necrotic, or infected. Most of the cysts are found in the liver, and some in lungs.

### **7. Diagnosis**

Routine fecal examinations of the definitive hosts are not reliable because of similarity to other tapeworm eggs. In an intermediate host, echinococcosis is mainly diagnosed at necropsy or slaughter houses during meat inspection. Serological tests are not generally used in domestic animals.

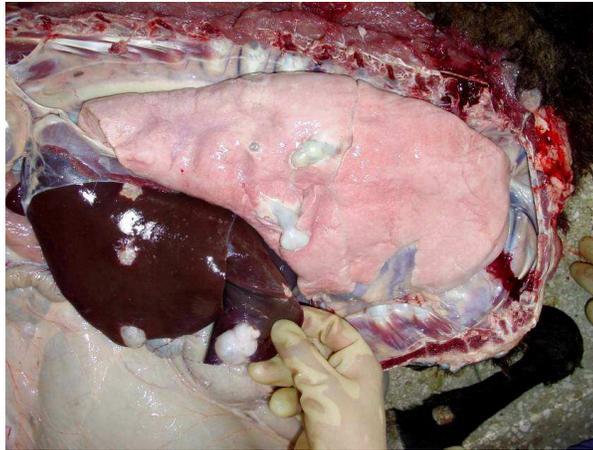
### **8. Treatment**

In the definitive hosts, *Echinococcus* can be treated with a number of anthelmintic drugs including praziquantel (Droncit). There is no treat-

ment in the intermediate host, except surgical removal of the cysts which is not feasible in livestock.

### **9. Prevention and control**

Infections can be prevented in dogs and cats by not allowing them to eat carcasses, particularly the internal organs of infected intermediate hosts. Dogs should not be fed raw offal from sheep, goats, and cattle. Regular examination and treatment of dogs, particularly sheep dogs, can reduce echinococcosis in domestic livestock. For human protection, dogs should be kept out of vegetable plots to prevent contamination of the vegetables by eggs from dog's feces. Hygienic measures such as hand washing should also be observed before eating or after petting dogs. Most cysts in sheep and goats are fully infectious so slaughter workers should be especially careful. Most cysts in cattle are sterile, and therefore of minimal risk to humans.



Echinococcosis cysts in liver and lung, sheep