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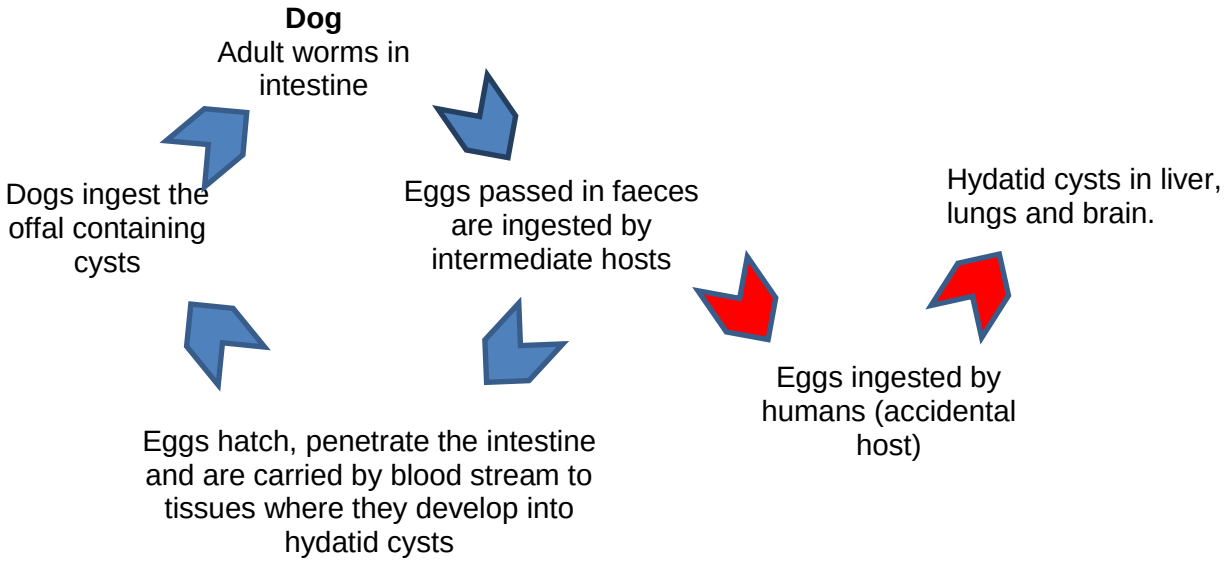
Echinococcus granulosus

Introduction

Echinococcosis or hydatid disease in man is caused by the larval stage of the dog tapeworm, *Echinococcus granulosus*. Hydatid disease is most extensively found in East Africa, North Africa, South Africa, the Middle East and parts of South America and Australia. The definitive host for this disease is the dog or other canids and the intermediate hosts are cattle, sheep, pigs, goats or camels.

Life Cycle



Man is an accidental intermediate host of hydatid disease. When the ova are ingested by a suitable intermediate host, they hatch in the duodenum and the onchosphere migrates to the blood stream where it is carried to the liver, lungs and other organs of the body. Here it develops into a hydatid cyst which consists of an outer thick laminated cyst wall and an inner, thin nucleated germinal layer. From the inner layer brood capsules are produced which contain protoscoleces. The brood capsules detatch from the germinal layer, releasing free protoscoleces. Hydatid sand is the name given to the fluid in the cysts which consists of protoscoleces, tissue debris and somethimes free hooklets. Here, the life cycle stops in humans, but is continued when

a hydatid cyst containing protoscoleces eg. in sheeps liver, is ingested by a suitable canine host where the protoscoleces develop into adult worms.

Pathogenesis

Hydatid disease in humans is potentially dangerous depending on the location of the cyst. Some cysts may remain undetected for many years until they become large enough to affect other organs. Symptoms are then of a space occupying lesion. Lung cysts are usually asymptomatic until there is cough, shortness of breath or chest pain.

Serious allergic sequelae, including anaphylactic shock, may occur if there is fluid leakage from the cyst in a patient previously sensitised by small fluid leaks into the circulation.

Laboratory Diagnosis

1. Imaging and serodiagnosis are the mainstay of diagnosis. Serological tests include Enzyme linked immunosorbent assay (ELISA), an indirect haemagglutination test and a complement fixation test.
2. .Microscopic examination of the cyst fluid to look for the characteristic protoscoleces which can be either invaginated or evaginated. The cyst fluid will also reveal free hooklets. **N.B. Diagnostic aspiration is contraindicated.**
3. Histological examination of the cyst wall after surgical removal.

Protoscolex of *Echinococcus granulosus* in cyst fluid demonstrating hooklets.

A free hooklet

Prevention and Epidemiology

1. Safe disposal of dog faeces.
2. Education to prevent feeding uncooked offal to dogs.