

ECHINOCOCCOSIS

FECAVA WORKING GROUP
ON ZONOOSES

1. DISEASE

Cystic Echinococcosis (Hydatid disease) & Alveolar Echinococcosis (Alveolar Hydatid disease)

2. NAME, DEFINITION, ETIOLOGICAL SPECIES

Echinococcus granulosus and *Echinococcus multilocularis*

- Echinococcosis is a nearly worldwide occurring zoonotic disease caused by tapeworms belonging to the genus *Echinococcus*.
- The major species of global medical importance are *Echinococcus granulosus* causing cystic echinococcosis (worldwide) and *Echinococcus multilocularis* causing alveolar echinococcosis (Northern Hemisphere).
- The adult tapeworms parasitize the testinum tenue of carnivorous animals.



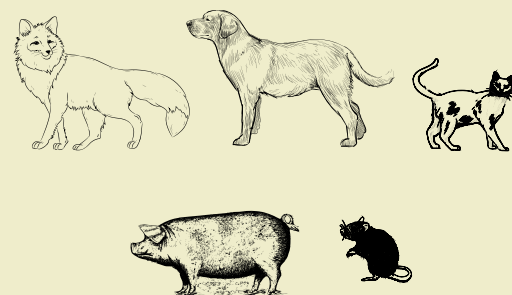
Photo courtesy of Dr. Stephan Neumann

3. DESCRIPTION OF THE ANIMAL RESERVOIRS

- Dogs, foxes, other regional canids (polar fox, jackal) and cats serve as definitive hosts.
- Herbivorous and omnivorous animals, like sheep, cattle, goats and pigs act as intermediate hosts for *E. granulosus*.
- Small mammals, mostly rodents, like field mice, water voles and muskrats act as intermediate hosts for *E. multilocularis*.
- Humans and many mammals can be infected as accidental hosts.

4. CLINICAL SIGNS, IF THERE ARE ANY

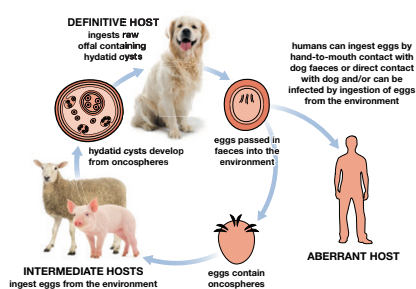
- *E. granulosus*: cysts filled with liquor – growing expansionary, serious hepatopathy or cysts in lungs, CNS, spleen etc.
- *E. multilocularis*: infiltrative growth of the metacystode like a malignant tumour, serious hepatopathy with metastasis in further organs (lungs, CNS, etc.).
- Definitive hosts have no symptoms.
- Intermediate hosts rarely show symptoms.
- Usually, accidental hosts show first symptoms years after infection.



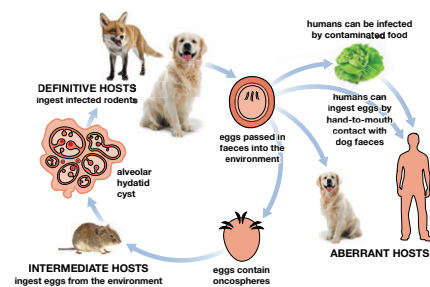
5. WAY OF TRANSMISSION TO HUMANS

- Oral intake of eggs (egg → hand → mouth) after contact with infected animals (eggs can stick to the fur), contaminated water, soil or food.

Echinococcus granulosus life cycle



Echinococcus multilocularis life cycle

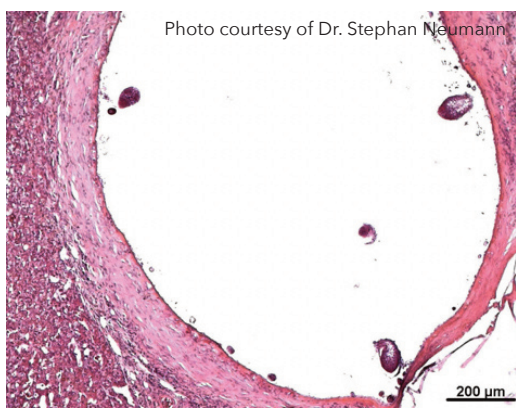


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ECHINOCOCCOSES

6. CLINICAL SIGNS IN HUMANS

- Usually, humans show first symptoms years after infection.
- *E. granulosus*: cysts filled with liquor – growing expansionary, serious hepatothopathy or cysts in lungs, CNS, spleen etc.
- *E. multilocularis*: infiltrative growth of the metacestode like a malignant tumour, serious hepatothopathy with metastasis in further organs (lungs, CNS, etc.).

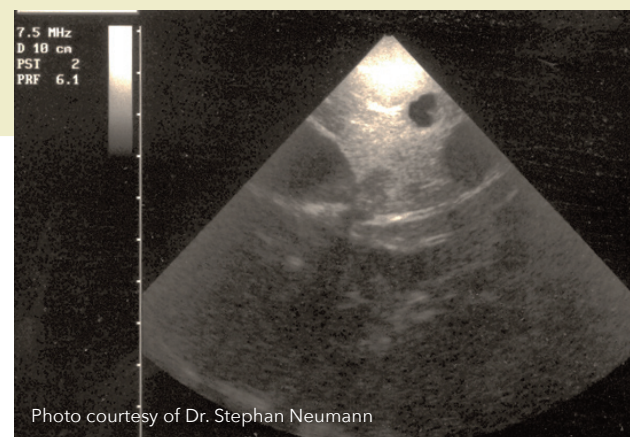


7. DIAGNOSIS IN HUMANS

- Medical imaging
- Antibody test (IHA, ELISA, Western Blot)
- CAVE: no puncture of the liver due to danger of metastatic spread

DIAGNOSIS IN ANIMALS

- Definitive hosts: coproscopy (poor sensitivity and unspecific), PCR (specific detection), ELISA.
- Intermediate hosts: post-mortem examination (metacestode).
- Accidental hosts: same instruments as diagnosis in humans.



8. PREVENTION OF THE DISEASE

- Personal hygiene (handwashing, especially after contact with animals and soil).
- Washing and cooking of fruits, berries, etc.
- Control of stray dogs.
- *E. granulosus*: deworming in intervals of 6 weeks (praziquantel).
- *E. multilocularis*: deworming in intervals of 4 weeks (praziquantel).



Liver and lung echinococcosis from sheep. Photo courtesy of Dr. Smaro Sotiraki DipEVPC

