Hydatid disease of the liver

*Echinococcus granulosus*

adult
Other forms

Echinococcus granulosus
Echinococcus multilocularis – alveolar hydatid disease

Differing stains – different hosts and intermediaries

Lifcycle of E. granulosus?

Carnivores (dog, dingo) definitive host, lives in the small intestine

Sheds ova into faeces

Sheep, cattle (kangaroos, pigs) intermediate host
Majority of affected patients have liver involvement

Liver
Lungs
Brain
Bone
Secondary spread
Endemic areas
Endemic areas

Mediterranean

New Zealand / Australia

Asia

also Americas (north, south & central)
Pathology

Migration via portal circulation
Essentially creates a cyst (mucopolysaccharide) lined by inflammatory reaction of the host
Echinococcus granulosus
hydatid cyst

*Ectocyst (laminated membrane)*

(by P.W. Rappas and S.M. Wardrop)

*Endocyst (Germinal membrane)*

*Scoleces (400,000 scoleces per 1 ml of ‘hydatid sand’)*
Natural History in Humans

Thought that some cysts die immediately
Essentially will continue to grow or die
Growth rate
?

Natural History in Humans

Thought that some cysts die immediately
Essentially will continue to grow or die
Growth rate
1-2 cm / year
Eventually reach the capsular surface of liver -
rupture intraperitoneally
intrathoracically
biliary system
Presenting symptoms

Abdominal pain (RUQ mass) – Liver being pushed down
Jaundice
Acute abdomen/ Rupture
Cholangitis
Secondary infection
chest pain/cough/haemoptysis/bilioptysis

2013 patients
- uncomplicated 82%
- biliary complications 12%
- thoracic complications 2.2%
- other rarer complications

Zaouche et al Tunisienne de Chirurgie 1997
Diagnosis

Clinical and physical examination
esp history of exposure

Imaging

Blood tests
Ultrasound classification
(I) Pure fluid collection
(II) Fluid collection with a split wall
(III) Fluid collection with septa
(IV) Heterogenous echographic patterns
(V) Reflecting thick walls
Laboratory diagnosis of hydatid disease

Tests:

?
Laboratory diagnosis of hydatid disease

Tests:

ELISA (Enzyme linked immunosorbent Assay)
very sensitive
cross reactive with other parasites

IEP
specific but only 90% sensitive
arc 5
us. becomes negative 6-12 months post death / Rx of cyst

Immuno HaemAglutination
- Has replaced the others over last 3 years
- Approx 98% accurate
Treatment

Symptomatic versus asymptomatic

Options:

1. medical Rx only
2. surgery
   - open
   - laparoscopic
3. percutaneous drainage
Benzimidazoles

Albendazole, mebendazole

Albendazole – most commonly used
  ? in combination with praziquantal
Anti-helminthic – direct effect on the parasite and perhaps on the cyst wall
Albendazole is administered in several 1-month oral doses (10-15 mg/kg/d) separated by 14-day intervals.
Side effect – hepatic enzyme disturbance, alopecia, glomerulonephritis, neutropenia
Clinical response to albendazole

Best results:
1369 patients
444 (32.4%) cured
598 (43.7%) improved
327 (23.9%) unchanged
Current role of albendazole ± praziquantel

1. Perioperatively
2. widely disseminated disease
3. poor surgical risk
4. alveolar echinococcosis
5. Small deep seated hydatids

**EBM review**

Three available RCTs showed that ABZ had a better effect on hydatid cysts than placebo [17, 21] or MBZ[20]. One prospective controlled trial compared ABZ and praziquantel versus ABZ alone [24] and concluded that the combined treatment was more effective than ABZ alone. However, complete disappearance of all cysts was not reached according to these data. Therefore chemotherapy is not the ideal treatment for hydatid cyst of the liver when used alone (level II evidence, grade B recommendation).  

Dzeri et al WJS 2004
Surgery

Principles – Remove all the hydatid scolicoles – complete removal of laminated membrane

Prevent abscess formation, sinus formation or biliary leak

Avoid intra-operative anaphylaxis

Avoid peritoneal spillage and dissemination
Definitive surgical options

Conservative

Radical
1) Excision of cyst and pericyst
2) Partial hepatectomy
Access – subcostal incisions  
(midline, rooftop or thoracoabdominal)

Liver mobilisation
Pack behind liver and pack-off cyst
Scolicidal agents
?
Pack behind liver and pack-off cyst
Scolicidal agents
Most effective  15-20% saline
  75% ethanol
  0.1-0.5% cetrimide
  1% povidine

Avoid Formalin & 0.5% Silver Nitrate
Aspirate cavity – avoid spillage of contents

Stay sutures, then open cyst

? Inject with scolocidal agent

Avoid scolocidal agents if the fluid is bile stained
Deal with residual cavity

Fill with saline or pack with omentum

Close

Drain the area
Communication with the biliary tree

Clinical or biochemical suspicion
Visual inspection
Cholangiogram - identifies communication
- cysts in ducts
Biliary communications closed off with sutures if small, peripheral ducts

Larger duct communication is usu. predictable on pre-op imaging ( close to ducts, LFTs )
consider: ECBD
T-tube
Percutaneous aspiration, injection and reaspiration (PAIR)

Scolicidal agents - ethanol, hypertonic saline, povodone

Used in conjunction with albendazole

< 5% incidence of anaphylaxis

Safe and effective

Uncomplicated cysts
Percutaneous aspiration, injection and reaspiration (PAIR)

Meta-analysis 769 patients with PAIR + Albendazole vs 952 era-matched patients treated surgically

Pair & Alb ↑ clinical efficacy
↓ morbidity, mortality, recurrence
↓ LOS

Smego Clin infect Dis 2003

According to our systematic review, PAIR with or without benzimidazole coverage may be comparable or superior to surgery or medical treatment with benzimidazoles alone for uncomplicated hepatic hydatid cysts, but the data are not sufficient to draw definite conclusions. Therefore, we cannot recommend the use of PAIR with or without benzimidazole coverage outside randomised clinical trials for treating patients with uncomplicated hepatic hydatid cyst.

Cochrane Collaboration 2006