HYDATID CYST

.PATHOGENESIS, CLINICAL FEATURES AND TREATMENT

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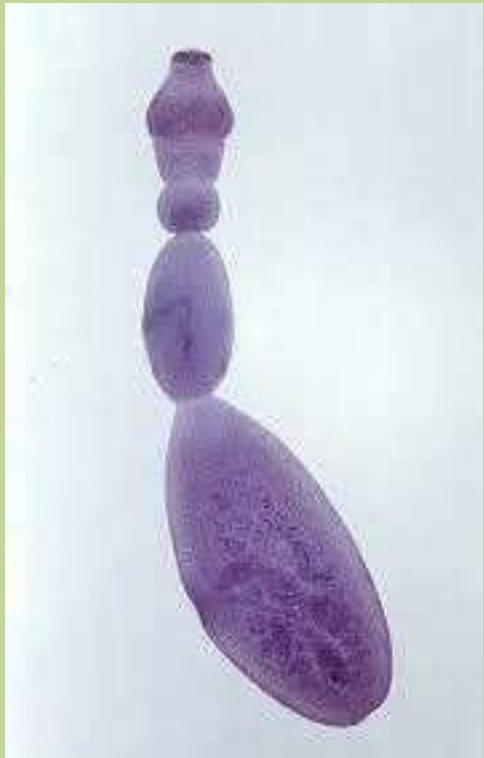
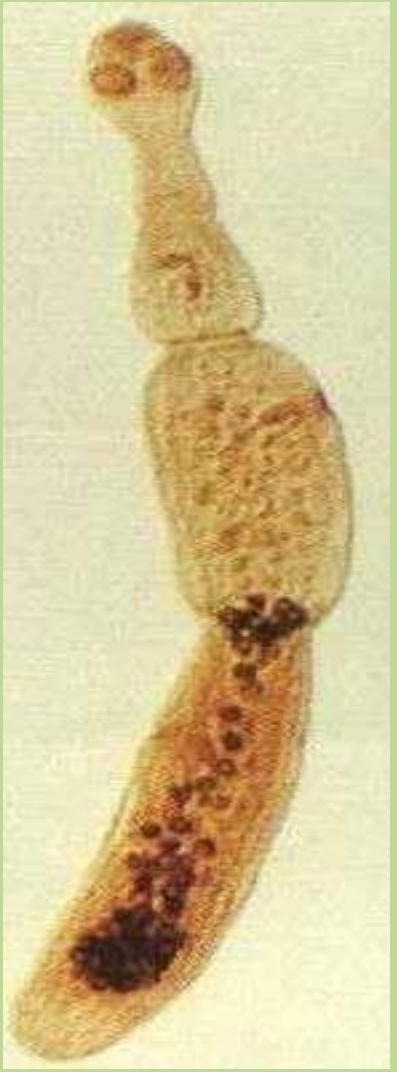
HYDATID DISEASE

- Hydatid disease)Echinococcosis)is an infection caused in humans by the larval stage of the Echinococcus genus which produce unilocular or poly cystic lesions and are prevalent in areas where livestock is raised in association with dog





- It is a zoonotic infection.

CAUSATIVE AGENT

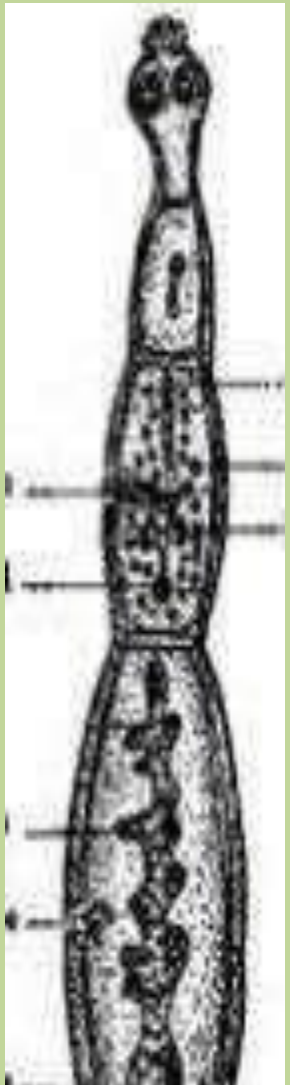
ETIOLOGY

Echinococcus

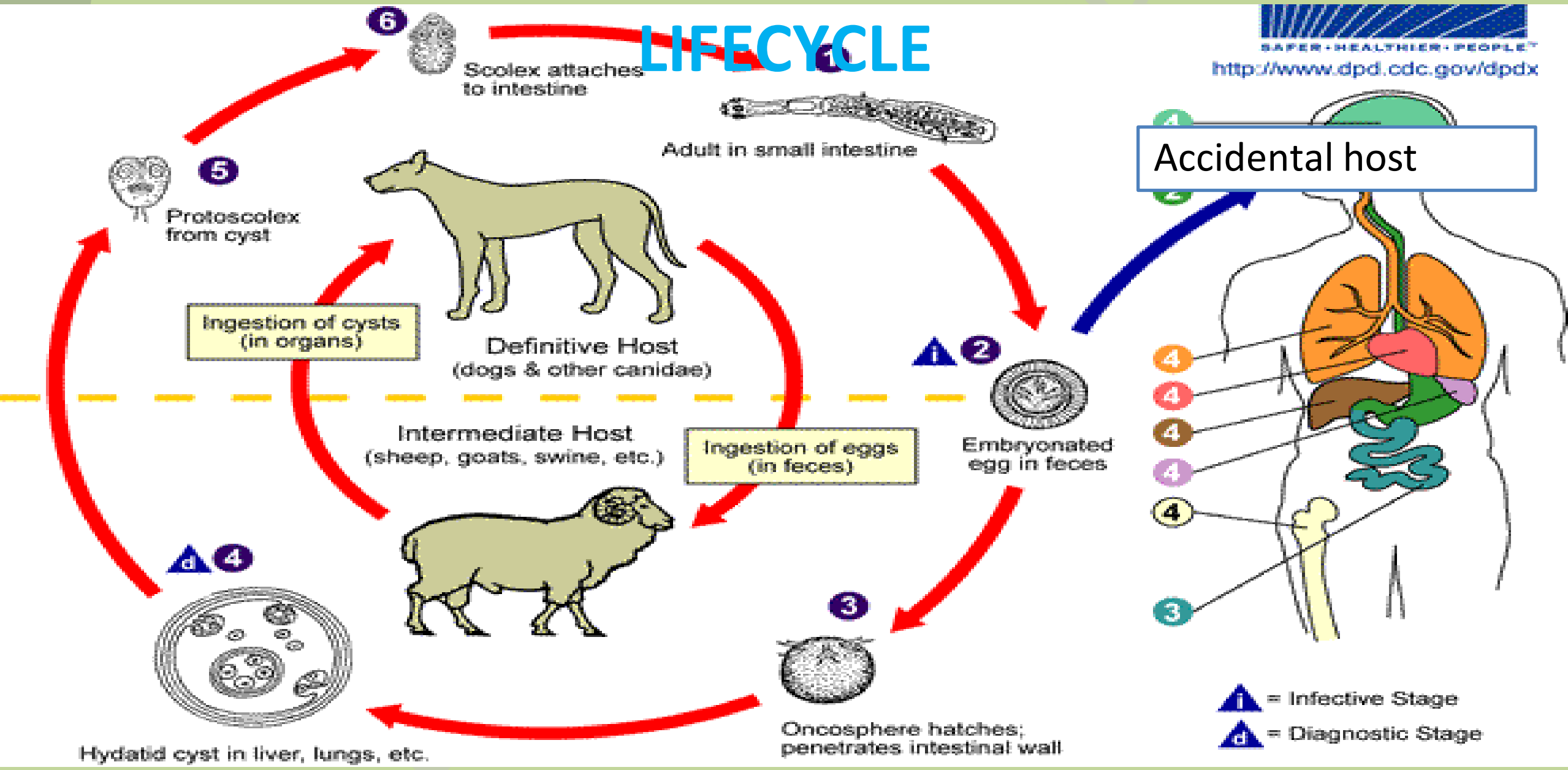
Echinococcus multilocularis

Echinococcus vogeli

- More in areas of sheep rearing
- Age- Cystic echinococcus more in 30-40yrs. Alveolar echinococcus in older indiduals(>50 yrs)
- Seen in people who are in contact with dogs



LIFECYCLE


SAFER·HEALTHIER·PEOPLE™
http://www.dpd.cdc.gov/dpdx
Accidental host
6
Scolex attaches to intestine
1
Adult in small intestine
5
Protoscolex from cyst
Ingestion of cysts (in organs)
Definitive Host
(dogs & other canidae)
i 2
Embryonated egg in feces
Intermediate Host
(sheep, goats, swine, etc.)
Ingestion of eggs (in feces)
d 4
Hydatid cyst in liver, lungs, etc.
3
Oncosphere hatches; penetrates intestinal wall
4
3
i = Infective Stage
d = Diagnostic Stage

IN HUMANS

Various organs

Man ingests egg

Penetrates intestinal mucosa

Enters portal vein

- Liver
- Lungs
- Muscles
- Bones
- Kidney
- Brain
- Spleen

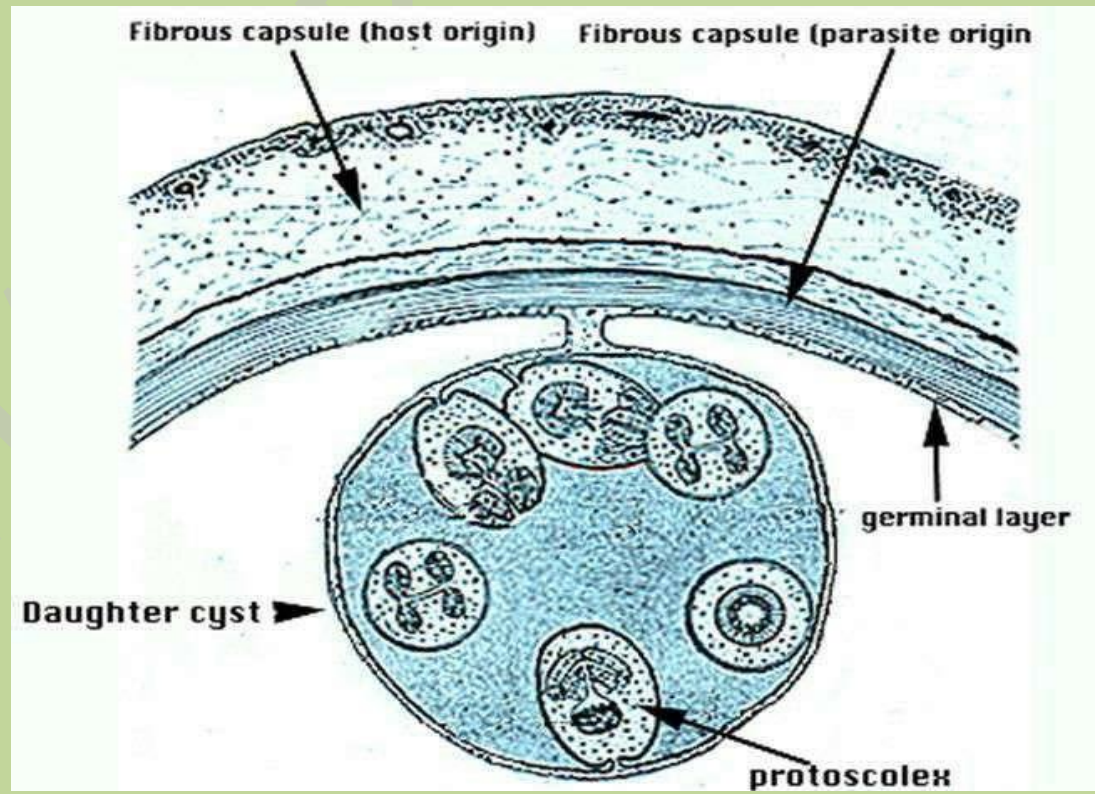
Larva develop into fluid filled hydatid cyst

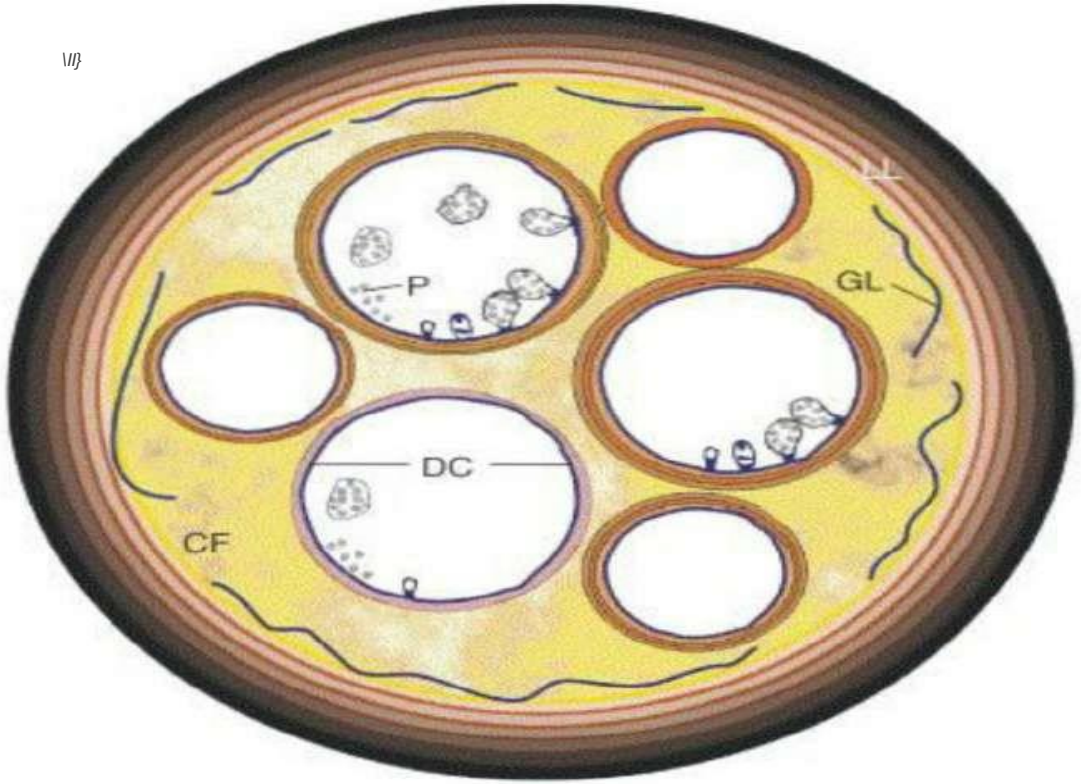
HYDATID CYST STRUCTURE

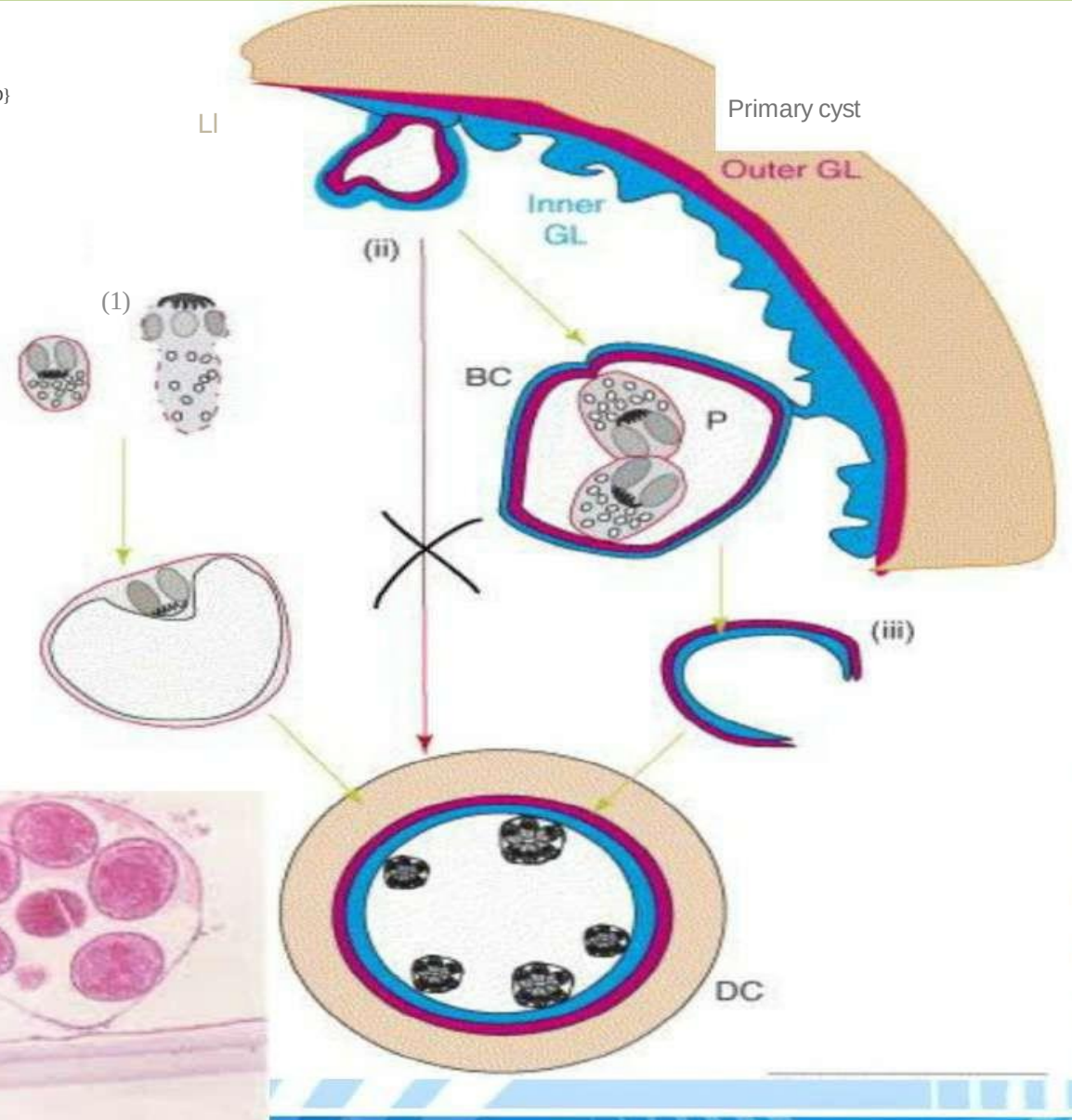
- It has three layers
  - Pericyst
  - Outer germinal layer(Ectocyst)
  - Inner germinal layer(Endocyst)
- Cyst fluid is a clear pale yellow fluid , antigenic in nature, containing scolices , hooklets and hydatid sand.

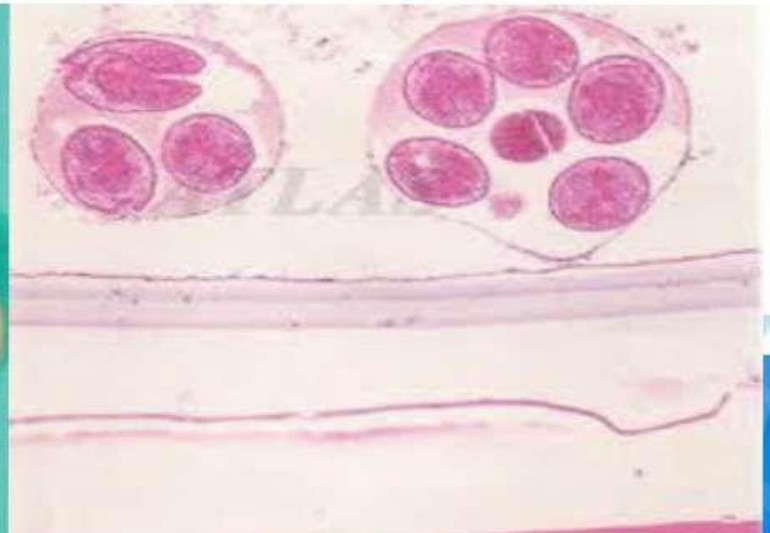
  Cyst contains protoscolices,

  daughter cysts , hydatid sand




P
GL
DC
CF


Primary cyst
Outer GL
Inner GL
(ii)
(1)
BC
P
(iii)
DC



PATHOGENESIS

Size	Site	Allergic
• Pressure necrosis	• Obstruction	• Systemic • Local

CLINICAL FEATURES:

E.granulosus- Cystic Echinococcosis

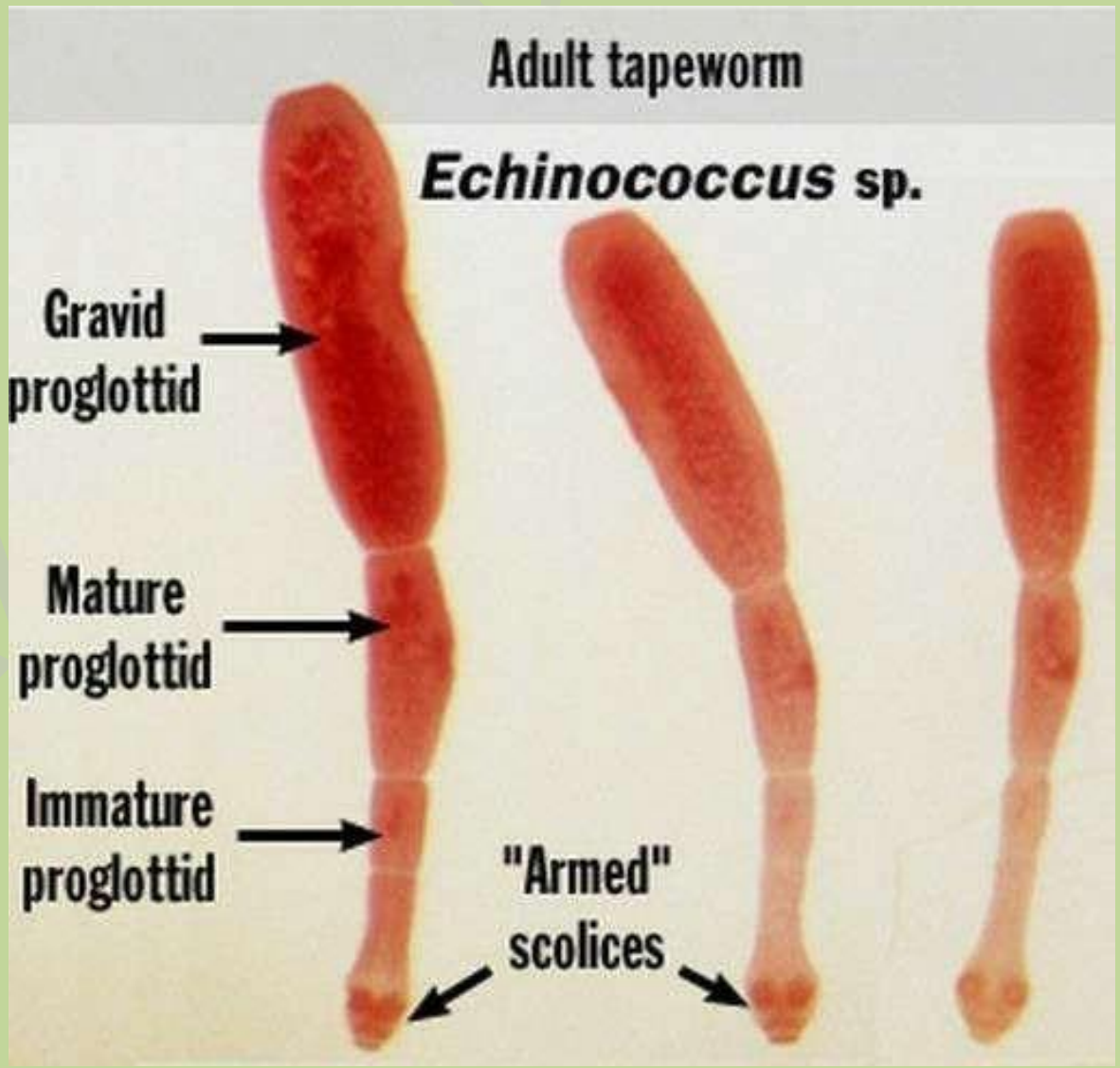
E.multilocularis-Alveolar Echinococcosis

E.vogeli-Polycystic hydatid disease

Degree of symptoms depend on:

- Parasitic load
- Size of cyst

  Site



SITES:

LIVER

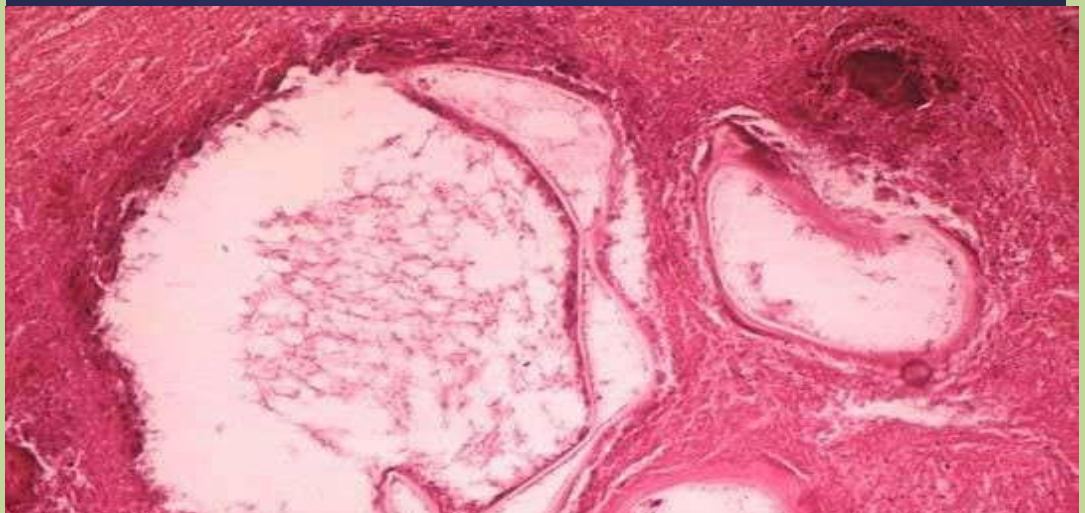
LUNG

OTHER

LIVER

- Most common site of involvement.
- Cysts in liver
- The most common presenting symptoms are:
  - abdominal pain,
  - dyspepsia, and
  - vomiting.
- The most frequent sign is:

hepatomegaly/palpable mass.



LIVER

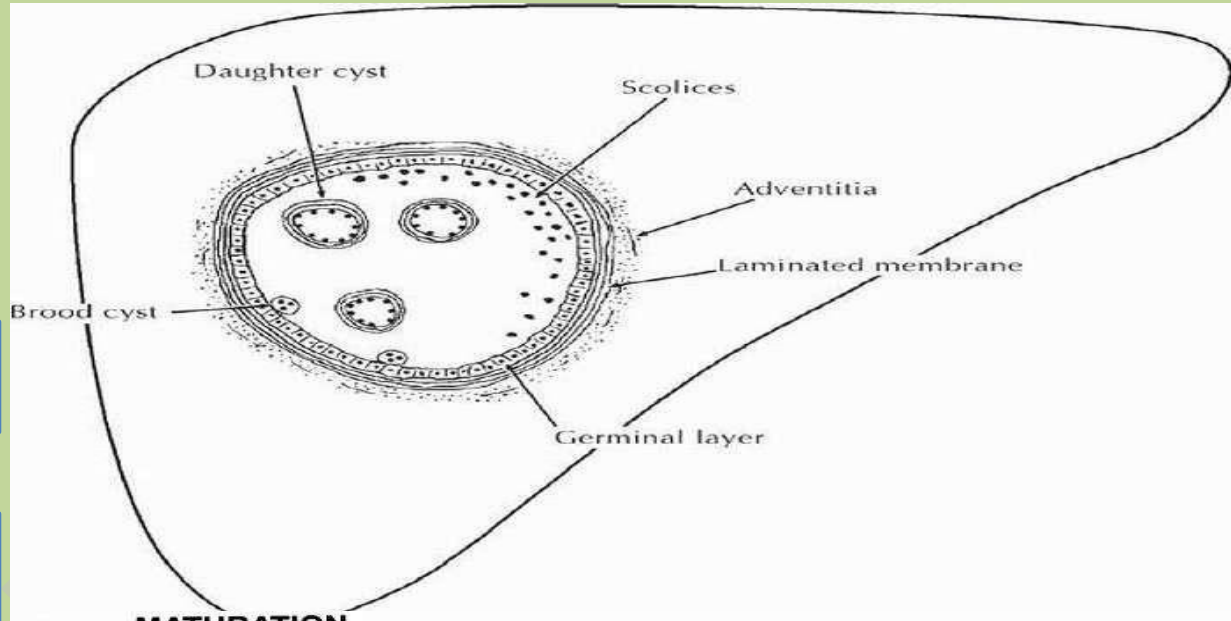
LOCAL COMPLICATIONS

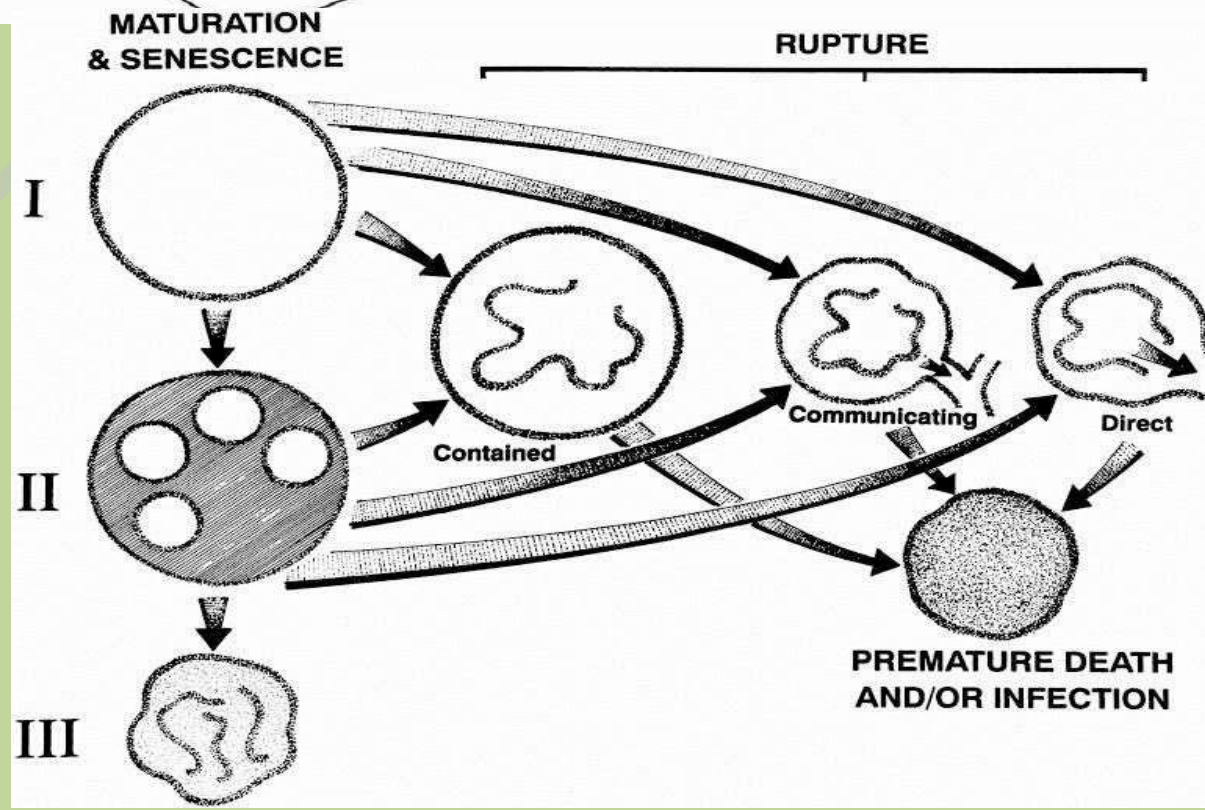
EXOPHYTIC

TRANS DIAPHRAGMATIC BILIARY

ABDOMINAL WALL

PORTAL VEIN INVOLVEMENT





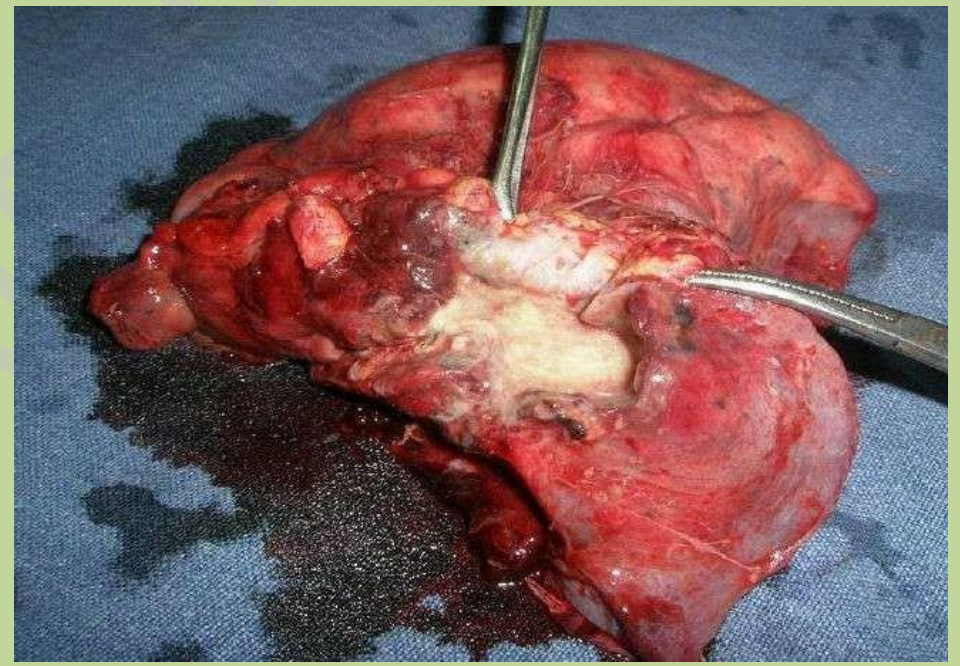
LUNG

- CLINICAL FEATURES
  - INCIDENCE Rural > Urban
- Male:Female ----- 5:1
  - Lower lobes R>L
  - Solitary small simple peripheral cyst asymptomatic

Symptoms:

chest pain, cough, haemoptysis, dyspnoea, , salty sputum

fever, allergy, sudden collapse



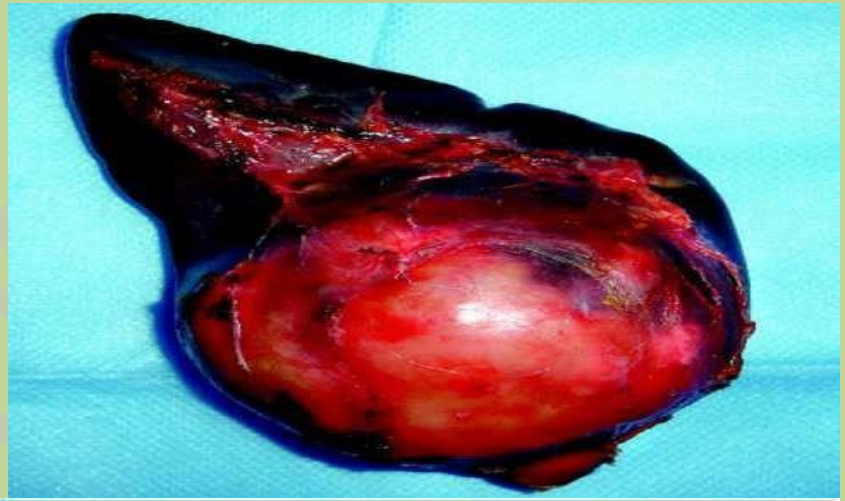
- Complications

– Compression
– Rupture
– Infection
– Calcification - rare

Fig 4: Specimen with canulated branch bronchi and branch pulmonary artery opening into the cavity.

SPLEEN

- Secondary to liver involvement, rarely primary.
- Third most common location of hydatid disease
- Frequent clinical signs and symptoms
  - abdominal pain
  - Splenomegaly
  - Fever
- Splenic hydatid cysts -usually solitary, imaging characteristics similar to hepatic hydatid cysts



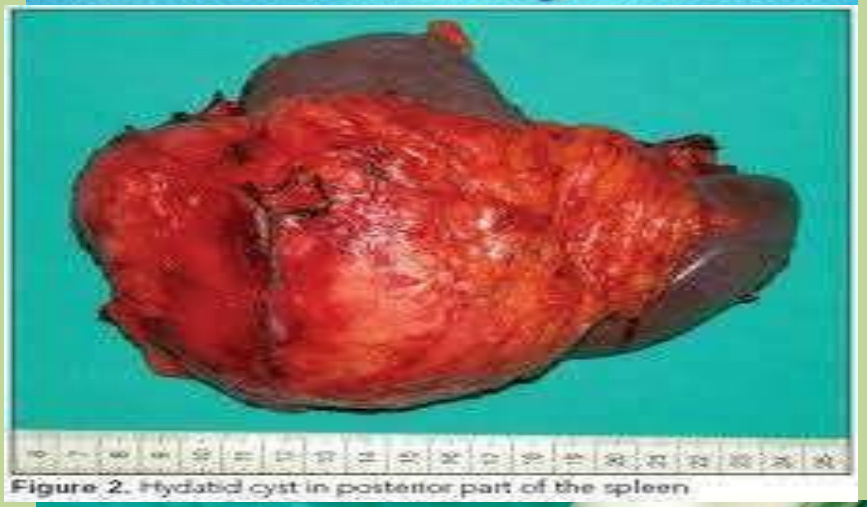
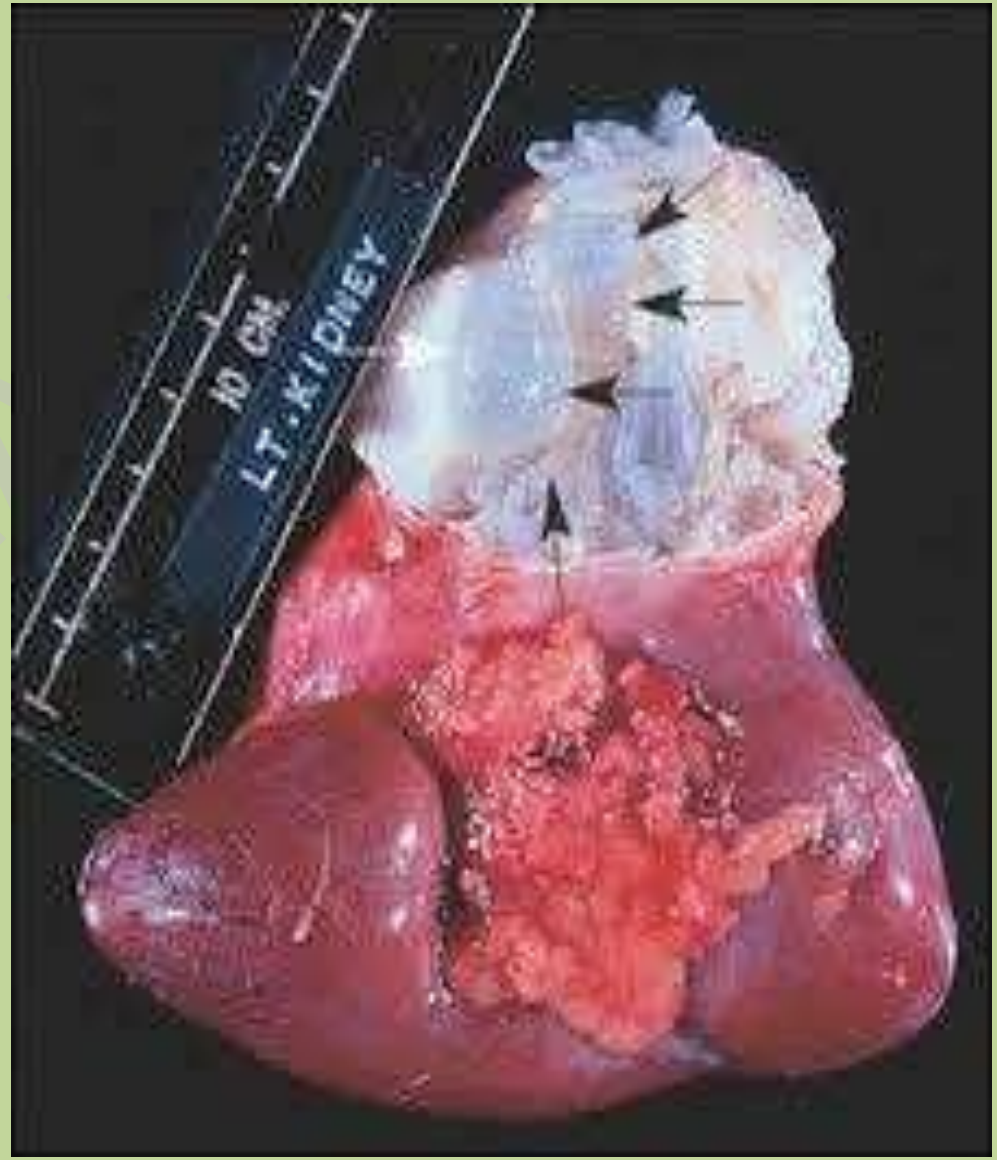


Figure 2. Hydatid cyst in posterior part of the spleen

KIDNEY

- Extremely rare(<5%) of patients with hydatid disease
- The kidneys are the most commonly affected urinary organs, but bladder, prostate, seminal vesicles and testis can also be involved.



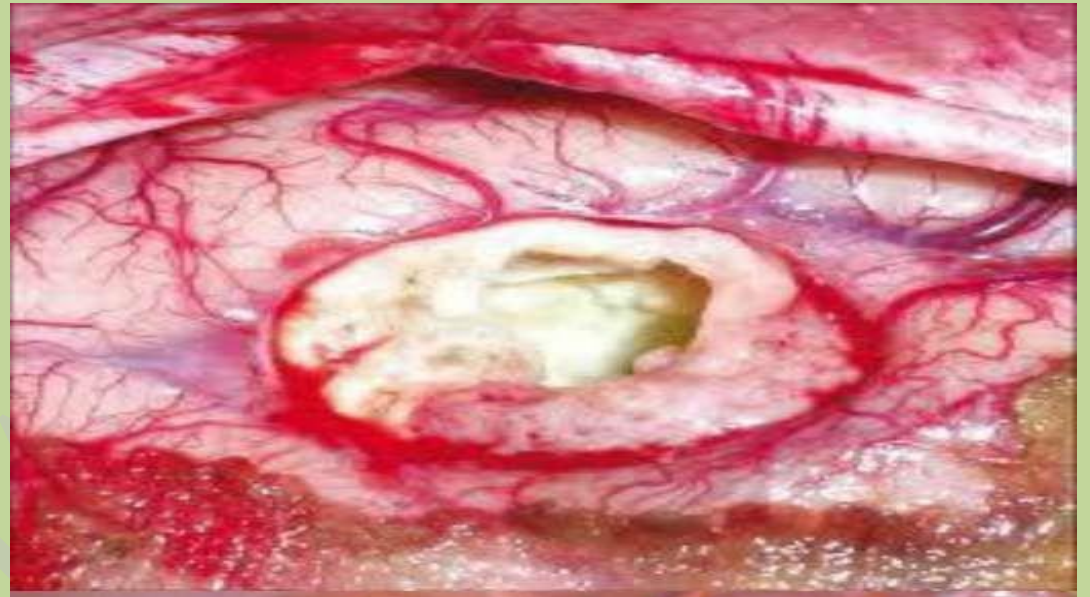
KIDNEY

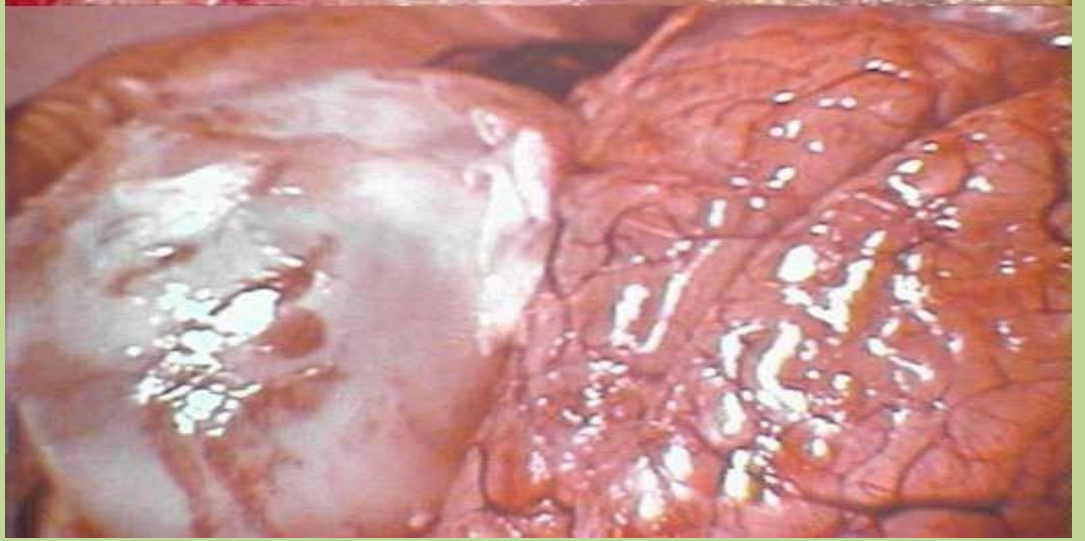
- Clinical manifestations

- Flank mass,
- Pain,
- Dysuria
- Hydatiduria pathognomonic sign due to rupture of a hydatid cyst into the collecting system.

BRAIN

- Most common in location of middle cerebral artery, in supratentorial than infra tentorial region.
- Symptoms
  - Focal neurological deficit
  - Hydrocephalus
  - Convusions
  - Cranial nerve palsies





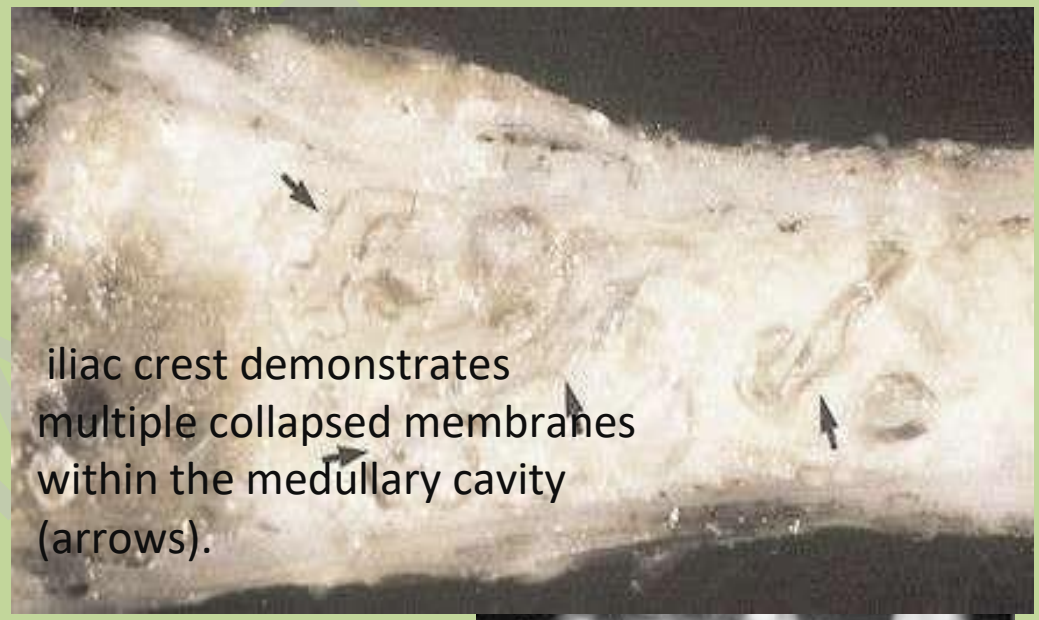
BONE

- most common in

  Spine and pelvis,

followed by
Femur,Tibia,Humerus,Skull, ribs .

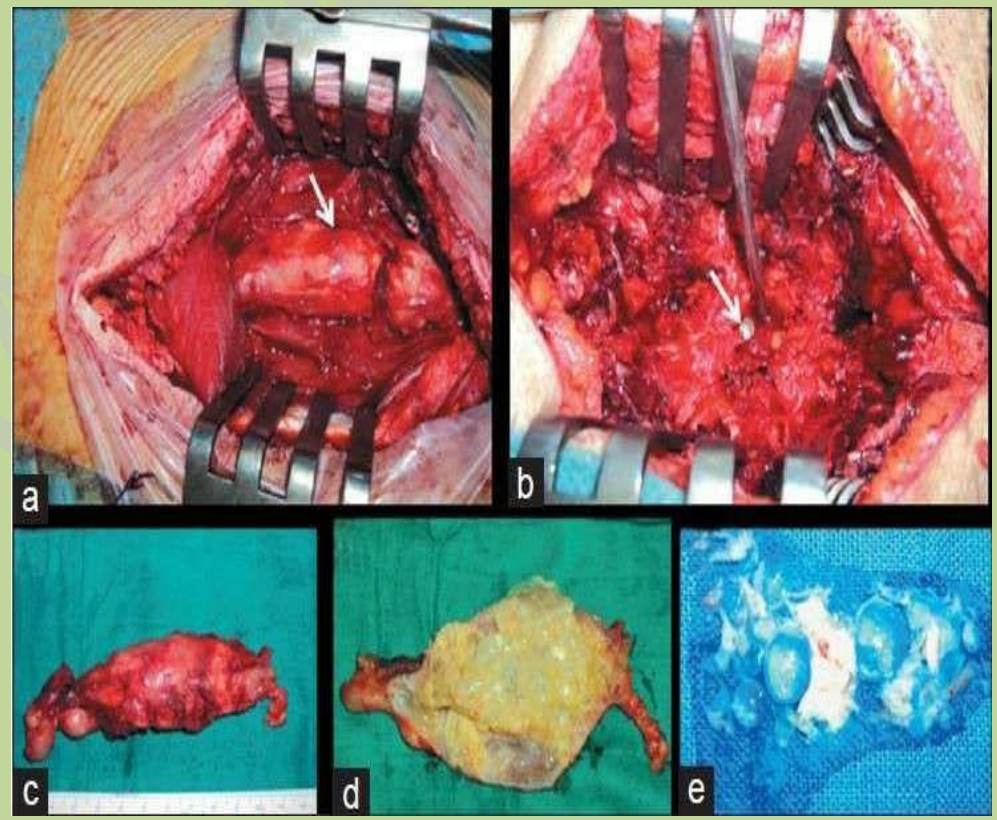
- In osseous locations manifests as different-sized areas of pure osteolysis and extends to the surrounding soft tissue
- Pathological fractures common


iliac crest demonstrates multiple collapsed membranes within the medullary cavity (arrows).

SPINE

- direct extension from pulmonary, abdominal or pelvic infestation
- thoracic > lumbar > cervical>sacral spine spread

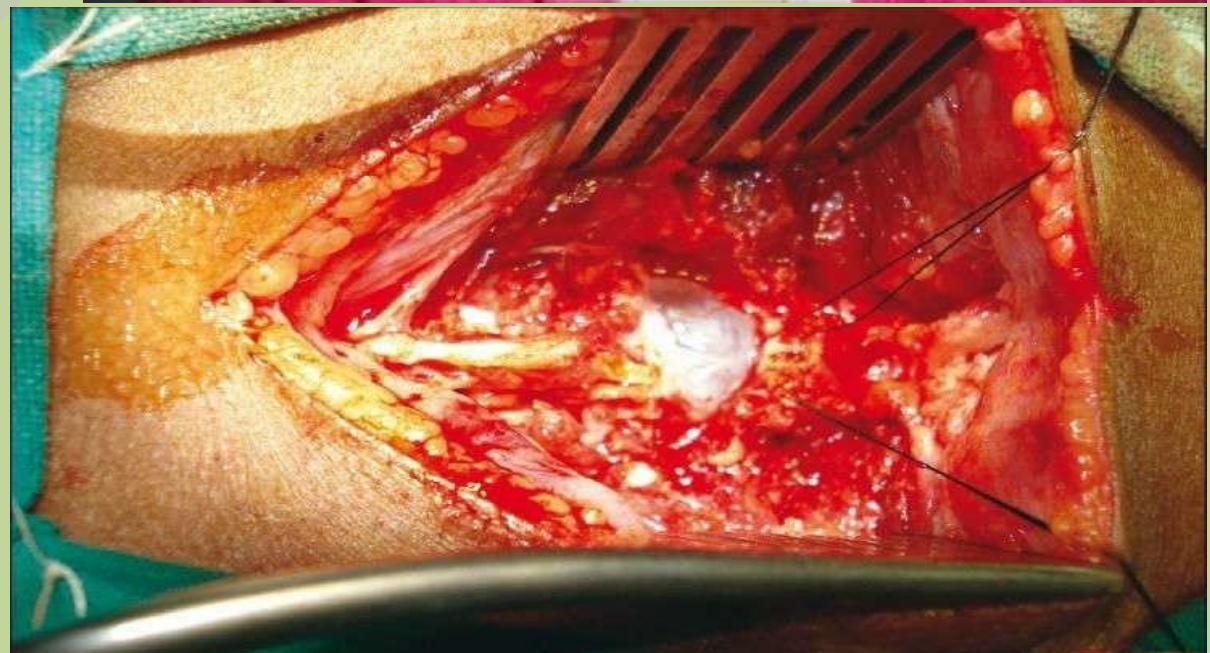
subperiosteal and ubligamentouspath



Paraspinal extension → Involvement of a contiguous rib

SPINE

- Clinical features
- Radiculopathy,
- Myelopathy
- local pain owing to bony destructive lesions,
- Pathological fracture
- Consequent cord compression.



OTHERS:

- heart,
- pericardium,
- omentum,
- retrocrural space
- mediastinum,
- subcutaneous
- Orbital involvement <1%

Diagnosis

History of contacting with sheep & dogs.
Clinical symptoms of a slow-growing tumor accompanied by eosinophilia are suggestive.

Generally, routine laboratory tests do not show specific results.
In patients with rupture of the cyst in the biliary tree,
marked and transient elevation of cholestatic enzyme levels occurs, often in association with hyperamylasemia and eosinophilia (as many as 60%).
Intradermal (Casoni) test with hydatid fluid is useful.

Antibodies against hydatid fluid antigens have been detected in a sizable population of infected individuals by ELISA or indirect hem agglutination test.

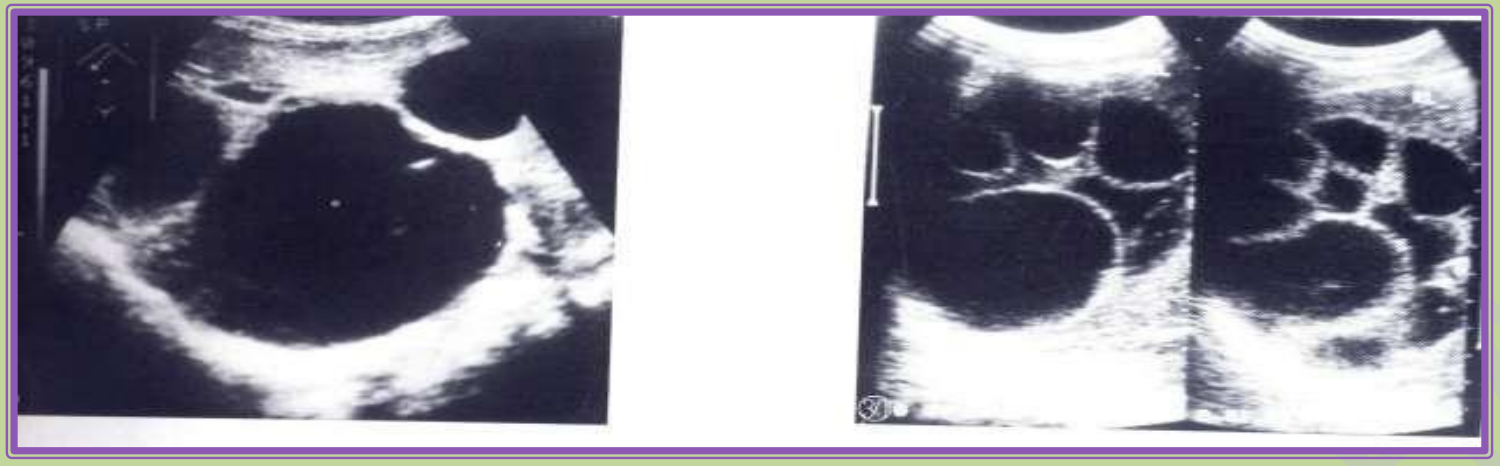
Indirect hem agglutination test and enzyme-linked immunosorbent assay are the most widely used methods for detection of anti-Echinococcus antibodies (immunoglobulin G [IgG]).These tests give false positive results in cases of schistosomiasis and nematode infestations that is why they are not specific for diagnosing hydatidosis.

Man's arm showing positive skin test for hydatid disease

:Imaging Studies

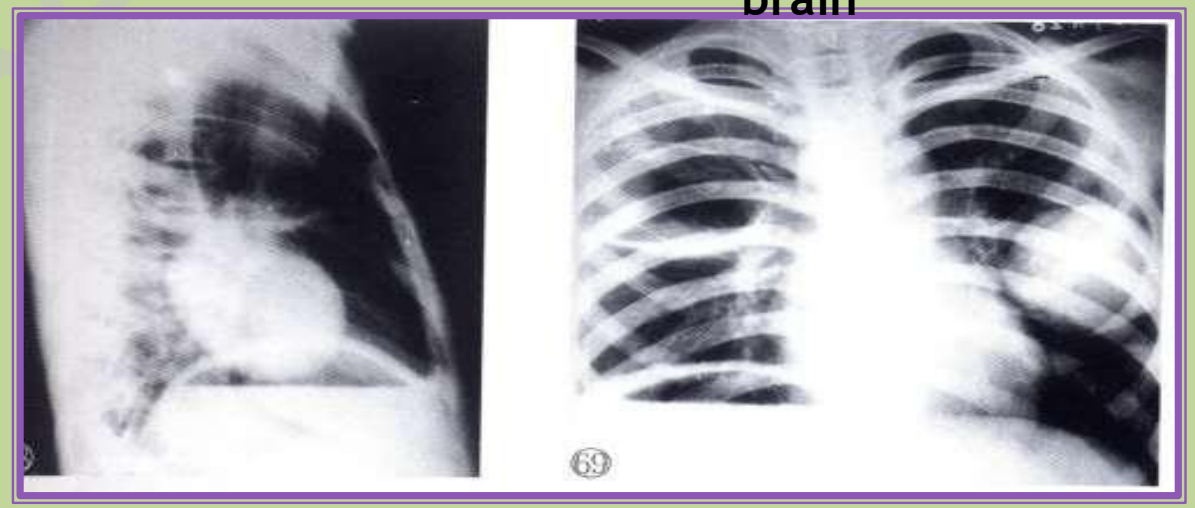
- Plain radiography
- Ultrasound examination
- CT scaning
- MRI

- Ultrasound and CT scan are the investigations of choice.
  The CT scan shows a smooth space-occupying lesion with several septa. An ultrasound of the biliary tract may show abnormality in the gall bladder and bile ducts due to hydatid infestation of the biliary system.



B-ultrasound, liver

CT,
brain



CT,
liver

X-ray,
lung

A

B

Types

Type I ---- Single cyst

Type II --- Mature cyst with daughter cysts

Type III --- Inert mummified and calcified cyst

Simple/ complicated --- (Rupture, Infection)

Table 1: Sonographic classification of hydatid cysts

Gharbi Type	WHO Type	Cyst Morphology
I	CE 1	Unilocular anechoic lesion with double line sign
III	CE 2	Multiseptated rosette like honeycomb cyst
II	CE 3A	Cyst with detached membranes (water-lily sign)
III	CE 3B	Cyst with daughter cysts in solid matrix
IV	CE 4	Cyst with hetrogenous hypoechoic/ hyperechoic contents. No daughter cysts
V	CE 5	Solid plus calcified wall

C

D

E

A. Surgical treatment :

1. by minimal access therapy PAIR – puncture, aspiration, injection and reaspiration. This is done after adequate drug treatment with albendazole, and praziquantel

Whether the patient is treated only medically or in combination with surgery will depend upon:

a. the clinical group (which gives an idea as to its activity),

b. the number of cysts and their anatomical position.

2. Radical total or partial pericystectomy with omentoplasty or hepatic segmentectomy (especially if the lesion is in a peripheral part of the liver).

During the operation, scolicidal agents are used, such as hypertonic saline (15–20%), ethanol (75–95%) or 1% povidone iodine.
This may cause sclerosing cholangitis if biliary radicles are in communication with the cyst wall.

.A laparoscopic approach to these procedures is being tried. **3**
.An asymptomatic cyst which is inactive (group 3) may just be observed. **4**

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B - medical treatment :) antihelminthic

Current indications

1-concurrent pulmonary or disseminated hydatid disease .
2-multiple
3-recurrent
4-inaccessible
5-spontaineous intraperitoneal or intrathorasic rupture
6-accidental contamination of peritoneum with cysts contents during surgery
7-unfit patients.

Drugs

Mebendazole 60 mg/kg per day for 6-24 /12
Albendazole 10 mg/kg per day for 6 /12 or for 4 wks courses of 4 courses with one wk free in between

Tinadiazole (tinifar) 500 mg tab initially 2 tab by 2 for one week and maintanace 2 tab per day for 6/12

Praziquantel 40-50 mg /kg per day

THANK YOU