

# Schistosoma and hydatid cyst

## Classification of Schistosomas species



## Geographical distribution and habitat



*S. Japonicum*



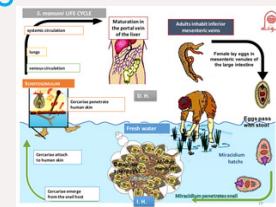
*S. mansoni*

Superior mesenteric veins mainly that supply the small intestine but can invade inferior mesenteric veins that supply the large intestine too

Inferior mesenteric veins that supply the large intestine

## Life cycle

- Habitat: Inferior mesenteric veins
- DH: Man
- IH: Biomphalaria alexandrina snail
- RH: Monkeys and rodents
- Diagnostic stage: Egg
- Infective stage: Furcrocercus cercaria
- Mode of infection: Swimming or drinking infected water



## Schistosoma mansoni

### Stages of disease

#### 1- Stage of invasion

##### Manifestations

- ❖ Skin lesion due to cercarial penetration.
- ❖ Local dermatitis, irritation, itching and papular rash.

#### 2- Stage of migration

- ❖ Lung : Irritation due to passage of schistosomulum causing minute haemorrhage, cough, sputum, dyspnea and eosinophilia, and pneumonitis.
- ❖ Liver : Enlarged tender liver and spleen.
- ❖ Toxic symptoms: Due to metabolic products of maturing parasites causing fever, anorexia, headache, malaise and muscle pain

#### 3- Stage of maturation (acute schistosomiasis-Katayama syndrome)

- The development of schistosomes into sexually mature, egg-producing adults with the beginning of egg-laying produces a form of acute schistosomiasis which is a systemic hypersensitivity reaction like serum sickness.
- It is manifested by fever, vomiting, diarrhea, enlarged lymph nodes and hepatosplenomegaly with marked eosinophilia.

#### 4- Stage of egg deposition and tissue reaction

- ❖ Trapped eggs in the intestinal wall formation of polyps, ulcers and granuloma causing abdominal pain, diarrhea and dysentery.
- ❖ Later on, the intestinal wall becomes fibrosed and thickened stricture of the wall.
- ❖ Sinuses or fistula can occur.
- ❖ Rectal prolapse.
- ❖ The eggs secrete proteolytic enzymes that provoke typical eosinophilic inflammatory and granulomatous reactions (bilharzial granuloma), which are progressively replaced by fibrotic tissue which is the main cause of pathology and complications.



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Cont...

4- Stage of egg deposition and tissue reaction

Eggs can reach the intestinal wall by:

1- Egg spine.

2- Proteolytic enzymes.

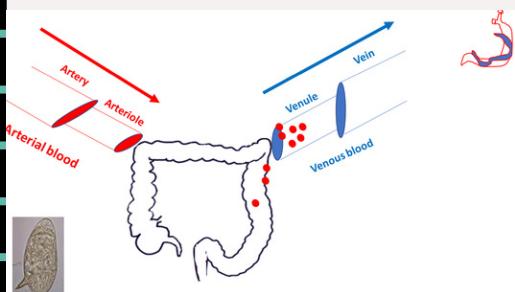
3-Elastic recoil of blood vessels.

The eggs have three destinations:

1- Pass through the wall to the lumen, or

2- Trapped in the wall which leads to granuloma, fibrosis, and strictures

3- Eggs moved with the venous circulation forming embolism. (Liver, lung, CNS, skin, ....)



Embolic lesions

Some eggs are swept back into the blood stream to different organs:-

Liver  
Periportal fibrosis  
portal hypertension  
hepatosplenomegaly  
ascites ,oesophageal varices(hematemesis)  
and hemorrhoids

Brain  
Cerebral schistosomiasis  
(more common with S. japonicum than S.mansoni)

Skin and kidney  
Dermatitis and glomerulonephritis

Lung  
Bihari cor-pulmonal  
Pulmonary  
hypertension & Rt. side heart failure with fever, dyspnea, cough, haemoptysis & lower limb edema.



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## Clinical picture summary

Satges	Clinical aspect	Manifestations
Early	1. Cercarial dermatitis	At the penetration sites of cercariae → itching & papular eruption
	2. Schistosomular migration	Migration of schistosomula → <b>lungs</b> : pneumonitis (fever, cough and haemoptysis) and → <b>liver</b> (tender hepatomegaly)
	3. Acute schistosomiasis (Katayama syndrome)	It occurs when worms mature in the liver, migrate to the small venules and begin to lay eggs. There is fever, abdominal pain, diarrhoea, wheezing, urticaria, marked eosinophilia, sometimes lymph node enlargement and hepatosplenomegaly.
Late	1. Chronic Intestinal schistosomiasis	Oviposition in the mesenteric plexus → diarrhoea with blood and mucus (schistosomal dysentery)
	2. Chronic hepatosplenic schistosomiasis 3. Advanced complications	<p><b>Granuloma Formation</b> in the liver → periportal fibrosis → Obstruction of the portal venous branches → portal hypertension → hepatomegaly &amp; splenomegaly</p> <p>Hypersplenism → Anaemia + thrombocytopenia</p> <p>Extensive periportal fibrosis → Hepatic failure</p> <p>Portal hypertension → Opening of porto-systemic collateral → oesophageal varices → fatal haematemesis</p> <p>Egg embolism → Lung &amp; CNS Ascites due to hypoproteinæmia + portal hypertension</p>



(A)

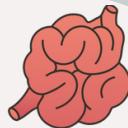


(B)





# Schistosoma and hydatid cyst



## Laboratory diagnosis



## Treatment

### Medical

Praziquantel effective against adult worms

Artemisinin effective against schistosomulum

### Surgical

#### For complications

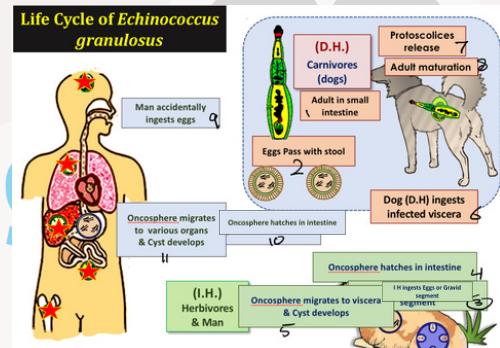
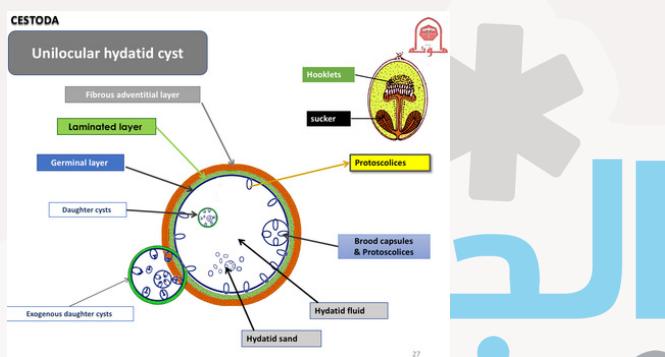
- 1) Detection of eggs in the stool by direct smear or concentration .
- 2) Thick faecal smear .
- 3) Rectal swab.
- 4) Rectal biopsy or liver biopsy in chronic stage

- 1) Intradermal test.
- 2) Serological tests : IHAT, CFT, and ELISA.
- 3) Recently: Detection of circulating Schistosoma antigens by using of monoclonal antibodies
- 4) Anaemia:-  
➤Iron deficiency anaemia due to blood loss.  
➤Haemolytic anaemia due to hypersplenism.
- 6) Eosinophilia



## Hydatid cyst disease

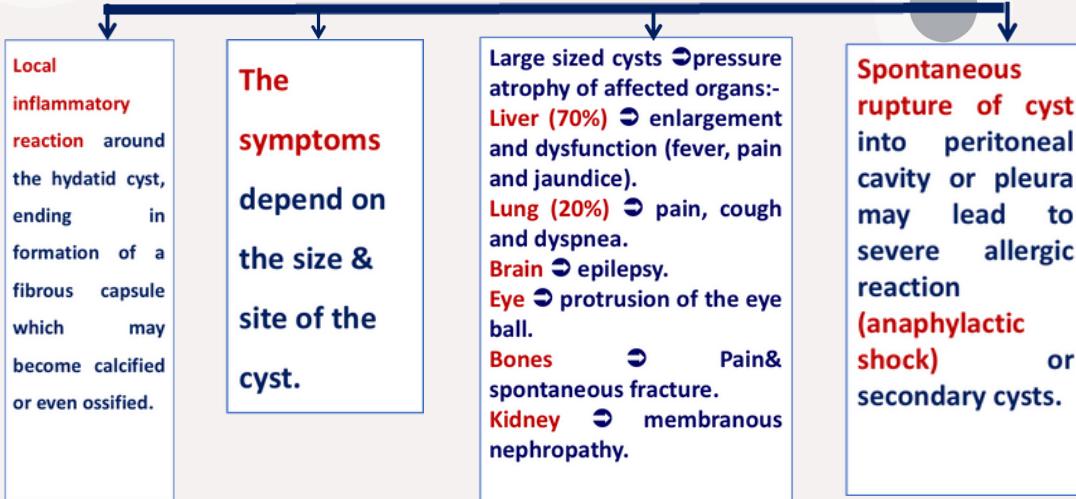
### Life cycle



### Hydatid cyst disease [Cystic Echinococcosis or Hydatidosis]

- ❖ It is a parasitic infection of both humans and other mammals such as sheep, and cattle with hydatid cysts, the larval stage of Echinococcus granulosus.
- ❖ Man is an intermediate and blind host for Echinococcus granulosus

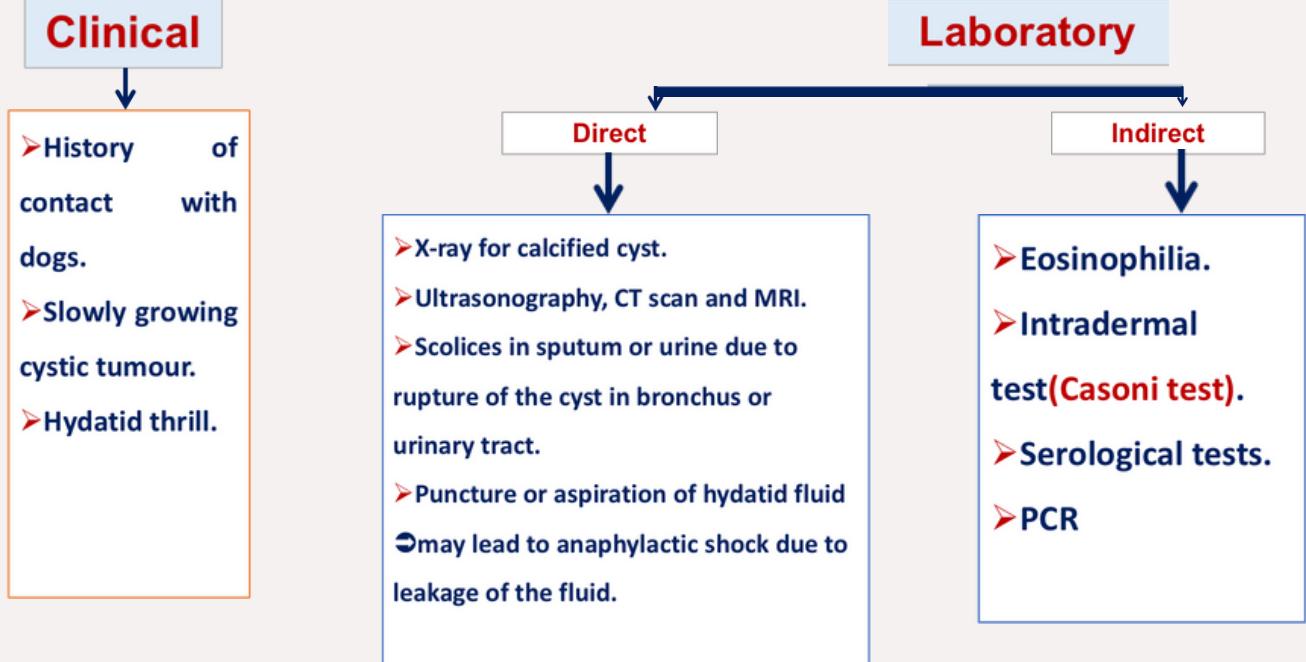
## Pathogenesis & Symptomatology





# Schistosoma and hydatid cyst

## Diagnosis



## Treatment

1. **Surgical removal of the cyst:** The most efficient treatment but it may cause mortality (2%) and recurrence of the disease (2 - 25%).

2. **Percutaneous treatment (PAIR):** In three steps:

Puncture (P) and needle aspiration (A) of the cyst.

Injection (I) of a scolicidal solution usually hypertonic sodium chloride

solution or ethanol and left for 5 - 30 minutes. Cyst-re-aspiration (R) and final washing.

✓ This procedure is indicated in **inoperable cases** and who have **drug resistance** (no response to medical treatment).

3. **Medical treatment:**

Indications: In inoperable cases and before and after surgery.

➤ Albendazole (**Drug of choice**).

➤ Mebendazole.

➤ The combination of ABZ and Praziquantel (PZQ) may provide **synergistic effect and better efficacy**.

﴿يُدَبِّرُ الْأُمْرُ﴾

"كلّ أمر .. فلا يخرج أمرٌ عن ثديبره!"

أمر العالم أجمع، ولا يُشغل ثديبر عن ثديبر، بِنَفْلِ الْخَلْفِ مِنْ حَالٍ إِلَى حَالٍ، وَمِنْ مُبْنِدًا إِلَى أَحْسِنِ مَآلٍ ..

حتى أمرك وشأنك بُدّبره يعلمك اللّامل، بُدّبره يحلفني بالبالغة، بُدّبره يقدرني الثامنة..".