



Parasites of Surgical Importance

Objectives

1. To classify parasites of surgical importance.
2. To outline the routes of infection of each parasite (To revise their life cycles).
3. To outline the confirmatory Laboratory tests of each parasite
4. To outline the Surgical complications of each parasite
5. To outline the Drugs used in the medical treatment of each parasite
6. To outline the Surgical treatment of complications of each parasite

Parasites of Surgical Importance

- **Protozoa** : Amoeba, Trypanosome cruzi, Toxoplasma gondi, Cryptosporidia, Microsporidia.
- **Helminths**
- **Nematodes (Worms)**: Ascaris lumbricoides, Filariae, Gnathostoma, Loa loa
- **Trematodes (Liver Flukes)** : Fasciola hepatica, Clonorchis sinensis, Schistosomes.
- **Cystodes (Tape Worms)**: Echinococcus granulosus, Taenia solium
- **Arthropods (Insects)**

Entamoeba histolytica

SURGICAL COMPLICATIONS

- **ABSCESS FORMATION**

(liver abscess, empyema thoracis, lung abscess, brain abscess, Intra abdominal abscess)

- **GIT (Amoebic Bowel Disease).**

(Colonic perforations, Toxic megacolon, Gangrenous colon,

Amoeboma/Intususception/Intestinal obstruction,,

- **DIAGNOSIS:** Stool, ELISA, Antigen test, PCR
- **MEDICAL Rx:** diloxanide furoate, metronidazole, tinidazole,.
- **SURGICAL Rx:**

INDICATIONS OF SURGERY

Abscesses:Aspiration, Open drainage.

Liver, lung, brain abscesses.(Poor response to medical treatment). Large left liver lobe abscess. Empyema thoracis

GIT:Int. Obs. Gangrene. Perforation. Rupture abd. abscess. Toxic megacolon. Haemorrhage.

Trypanosoma cruzi (Chaga's disease)

- **INFECTION:** Triatomine to human (skin contact with bug feaces- (infective metacyclic trypanomastigotes).
(Trypanomastigotes – adults in human).
- **SURGICAL COMPLICATIONS**
GIT: Chagas' mega-oesophagus.
Chagas' megacolon.
CVS: Chagas' cardiomyopathy

- **DIAGNOSIS:** BS, ELISA, PCR.
- **MEDICAL Rx.** “??” Nifurtimox, Benzinidazole

- **SURGICAL Rx.**

Mega-oesophagus – Dilatation,
- Cardiomyotomy

Megacolon – Conservative

Sigmoid resection

Cardiomyopathy – Pace maker

Heart transplant

Toxoplasma gondii

INFECTION: Cats-domestic animals- humans. Oral (meats), vertical, blood transfusion.

SURGICAL COMPLICATIONS:

Ocular toxoplasmosis : Cataracts. Posterior uveitis. Retinochroiditis

- **DIAGNOSIS:** ELISA, Latex Agg test, Dye test, lymphnode biopsy
- **MEDICAL Rx:** Pyrimethamine, sulfadizine, folinic acid, atovaquone, cortcosteroids
- **SURGICAL Rx:** Cataract excision, Photo coagulation, Vitrectomy

Cryptosporidium parvum

- **INFECTION:** Faecal-oral (oocysts). Adult trophozoites
- **SURGICAL COMPLICATIONS**
Obstructive jaundice. Cholangitis. Cholecystitis.
- **DIAGNOSIS:** Stool (modified ZN) / Fluorescent, PCR
- **MEDICAL Rx:** Supportive (diarrhoea), “HAART”, ? Specific Rx.
- **SURGICAL RX:** Sphincterotomy. Choledochostomy. Cholecystectomy.

Microsporidia

- **INFECTION:** Feacal-oral. Oocysts.
- **SURGICAL COMPLICATIONS**
Obstructive jaundice. Cholangitis.
Cholecystitis.
- **DIAGNOSIS:** Stool. Bile. PCR.
- **MEDICAL Rx:** Albendazole. “HAART”
- **SURGICAL Rx;** Sphincterotomy.
Choledochostomy. Cholecystectomy.

Ascaris lumbricoides

- **SURGICAL COMPLICATIONS**

Int. Obst. Obstructive jaundice. Cholangitis.
Cholecystitis. Liver abscess.

- **DIAGNOSIS:** Stool. U/S (biliary). X-ray (I.O).

- **MEDICAL Rx :** Mebendazole. Albendazole.
Piperazine phosphate.pyrantel pamoate.

- **SURGICAL Rx:** I.O. – Conservative. Hypertonic saline enema. Laparotomy.

Biliary. – Medical 2-3 weeks.

Removal:Sphincteromy(ERCP).
Choledochotomy

Liver Flukes (Fasciola hepatica, clonorchis sinensis

- **INFECTION:** F.h.- Sheep-Snail- human (metacercaria - oral water).
C.s.- human-snail-fish-human (metacercaria oral-fish)
 - **SURGICAL COMPLICATIONS:**
Obstructive jaundice. Cholangitis. Cholecystitis.
 - **DIAGNOSIS:** Stool. Bile exam. ERCP.
Cholangiography. Serology (Fasciola). U/S & CT
 - **MEDICAL Rx:** praziquantel. Albendazole.
 - **SURGICAL Rx:** Sphincterotomy (ERCP).
Choledochostomy . Cholecystectomy.
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Schistosoma (haematobium, mansoni, jabonicum

- **INFECTION:** human-Snail-human (cercaria skin).

- **SURGICAL COMPLICATIONS**

Liver: Schistosomal cirrhosis. Portal Hypertension. Splenomegaly.

GIT. Oesophageal varices. Colonic polyps. Colonic strictures. Intestinal obstruction. Anorectal abscesses. Anorectal fistulae.

Urinary: Ureteric strictures. Urethral strictures. C.A. bladder (SCC).

- **DIAGNOSIS:** (S.m.Sj.)- Stool, Rectal biopsy.
(S.h.) – Urine exam.

- **MEDICAL Rx:** praziquantel

- **SURGICAL Rx:**

Liver complications: Portal Hypertension.
Oesophageal varices. Schistosomal.
Cirrhosis. Splenomegaly.

GIT complications: I.O., Colonic strictures.
Colonic polyposis. Anorectal abscesses. / fistulae.

Urinary complications. Ureteric/urethral
strictures. Carcinoma (SCC).

Lymphatic Filariasis – *Wuchereria bancrofti*

- **INFECTION:**(Culex/Anopheles bites).
- **SURGICAL COMPLICATIONS:** Chronic lymphoedema. Hydrocoele. Abscesses. Chyluria.
- **DIAGNOSIS:** Eosinophilia. Chylous urine. Chylous hydrocoele fluid. ?????? Biopsy.
- **MEDICAL Rx.** Diethylcarbamazine. Albendazole. Ivermectin
- **SURGICAL Rx:** Pneumaticcompression. Reconstructive surgery debulking. Hydrocoelectomy. Chyluria - Renal pedicle lymphatic disconnection.

Echinococcus Granulosus - Cystic hydatid disease

- **INFECTION:** Dog- human. Feacal oral

- **SURGICAL COMPLICATINS**

Liver cysts - 52 – 77 %

Lung cysts – 8.5 – 44 %

Mesenteric cysts – 8 %

CNS cysts – 0.2 – 2.4 %

Bone cysts –1- 2.5 %

DIAGNOSIS: U/S. CXR. CT. ELISA.CFT.

Immuno-electrophoresis. Immunoblot.

MEDICAL Rx: Albendazole. Mebendazole.

Praziquantel

Surgical treatment

- **LIVER CYSTS.**

PAIR (percutaneous Aspiration Injection & Re-aspiration).

SURGERY (OPTIONS)

Cystostomy deroofing omentoplasty.

Partial resection

Marsupialization tube drain omentoplasty.

Radical resection (total cystoperi cystectomy)

Partial hepatectomy

Scolicidal Agents

- 20% HYPERTONIC SALINE
- 0.5% SILVER NITRATE
- 95% STIRILE ALCOHOL (**FOR PAIR**)
- ABSOLUTE ALCOHOL (**FOR PAIR**)
- Mebendazole (under trial)
- (Obsolete – formalin (formaldehyde))

PAIR – Puncture, Aspiration, Injection, Reaspiration

- **INDICATIONS FOR “PAIR”**

Failure of medical Rx. Refusal. Inoperability. Cyst > 5cm. Multiple cysts >5cm. Types I,II,III cysts. Recurrence.

- **CONTRA INDICATIONS TO “PAIR”**

Dead inactive csts. Multiple loculations. Inaccessible cysts.

- **COMPLICATIONS OF “PAIR”**

Urticaria/anaphylaxis. subcapsular naematoma. Biliary fistula. Secondary infection. Fever.

Liver Surgery

- **INDICATIONS:**

Poor or lack of response to medical Rx.

Large cysts with daughter cysts.

Superficial cysts.

Secondary bacterial infection.

Cysto-biliary fistula.

Pressure effects.

- **CONTRA INDICATIONS:**

Inoperable cases. Inaccessible cases

Dead inactive cysts.

Extra-hepatic Hydatid Disease.

- **LUNG CYSTS:**

Enucleation. Capitonage. Cystotomy.

NB. Resection of lung tissue (wedge resection, lobectomy, pneumonectomy) only if unavoidable.

- **BRAIN CYSTS.**

Dowling's technique.

- **RENAL CYSTS**

Cystectomy. Marsupilization. Nephrectomy

- **SPLEEN CYSTS . Splenectomy.**

- **BONE CYSTS:** Excision and prosthesis

- **MUSCLE CYSTS** Radical cystectomy

Echinococcus Multilocularis, Alveolar Hydatid Disease

- **INFECTION:** Cats to humans. Feacal oral.
- **SURGICAL COMPLICATIONS**
 - Liver cysts – 90 %
 - Portal hypertension
 - Budd Chiari Syndrome
 - Secondary bacterial infection.
- **DIAGNOSIS** – ELISA. U/S. CT.
- **MEDICAL Rx:** - Albendazole. Mebendazole.
- **SURGICAL Rx** – Partial hepatectomy. Liver transplant.

Taenia Solium – Pig tape worm, Cysticercosis

- **INFECTION:** Pig to human (oral pork).
Human to human (fecal oral)
 - **SURGICAL COMPLICATIONS**
Neurocysticercosis. Spinal cysticercosis.
Intra ocular cysticercosis
 - **DIAGNOSIS** – EITB (Enzyme linked Immuno-Electrotransfer blot) is 94-98% sensitive.
Subcutaneous/muscle biopsy. CT/MRI. ELISA.
- MEDICAL Rx.** Albendazole. Praziquantel.
- SURGICAL RX.** Neuroendoscopy. Ventricular shunts. Open surgery
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