PATHOGENESIS AND CLINICAL FEATURES OF HYDATID CYST

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7th Semester
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 dogs.
- It is a zoonotic infection.
CAUSATIVE AGENT

- Echinococcus granulosus
- Echinococcus multilocularis
- Echinococcus vogeli

ETIOLOGY

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

Accidental host
IN HUMANS

Various organs
• Liver
• Lungs
• Muscles
• Bones
• Kidney
• Brain
• Spleen

Man ingests egg → Penetrates intestinal mucosa → Enters portal vein → 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, and hydatid sand.
# PATHOGENESIS

<table>
<thead>
<tr>
<th>Size</th>
<th>Site</th>
<th>Allergic</th>
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<tbody>
<tr>
<td>• Pressure necrosis</td>
<td>• Obstruction</td>
<td>• Systemic</td>
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<tr>
<td></td>
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<td>• Local</td>
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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
• Types
  – Type I ---- Single cyst
  – Type II --- Mature cyst with daughter cysts
  – Type III – Inert mummified and calcified cyst
  – Simple/ complicated ( Rupture, Infection)
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
• 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
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
  - Convulsions
  - Cranial nerve palsies
BONE

- most common in
  - Spine and pelvis, followed by the
  - 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 subligamentous path

Paraspinal extension ➔ Involvement of a contiguous rib
• Clinical features
  - Radiculopathy,
  - Myelopathy
  - Local pain owing to bony destructive lesions,
  - Pathological fracture
  - Consequent cord compression.
OTHER

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

• Orbital involvement <1%
REFERENCES

• MEDSCAPE
• Parasitology by CJ Paniker
• Robbins & Cotran Pathology
• Radiopedia.org
THANK YOU