Complicated echinococcal cyst – to Biopsy or not to biopsy

V. Rusanov  MR Kramer
Pulmonary Institute, Rabin medical center
Case 1

- 84 y.o. Male, Iraq descend, past smoker 40 PY
- Medical History - HTN, Rheumatoid Arthritis
- Bronchoscopy 2009 for evaluation ILD
  TBB: Small lymphocytic infiltrates, no granuloma, no evidence of malignancy
- PFTs – Mild Restrictive pattern
Case 1

- Return for follow up 01.2012 after admission with suspected Pneumonia.
  - Dyspnea on exercise, PFTs no significant difference from 2009, improved after diuretics
  - Cardiac ECHO - Moderate-Severe AS
  - Chest CT 01.2012 Interstitial lung disease, no significant difference from 2009
Case 1

- 09.2012  Mild hemoptysis two month, progressive dyspnea,
- Chest CT - new thick-wall cavitated lesion in the RLL, enlarged and necrotic mediastinal LN, bilateral pleural Effusion
Case 1

- Labs:
- WBC 24400; 84% PMN
- Eosinophyllia 1600 Mild Anemia
- Elevated ESR 100
- CRP elevated - 9.8mg/dl (N <0.5mg/dl)
Case 2

- 82 years old man born in Lybia
- Non smoker
- Anemia  Hb-10.2 gr
- Weakness
Case 2
Case 2
Case 2
What is your DD?
What is the next step?
Our Differential diagnosis

- Echinococcal cyst
- Infection (Abscess)
- Malignancy
Case 1

- Albendazole 400 MG X2 and wide spectrum antibiotics were started
- Rt pleural effusion fluid - transudate
- WBC - 220 (neut 37% lymph 13% 4% Eo), cytology - neg
- Cardiologist consulting - moderate-severe AS
- Not enough severe to explain the patient’s dyspnea,
- No indication for TAVI.
- Conservative management for CHF
Patient 1

- A month after treatment: dyspnea not improved, WBC 50-55 K!!, Eosinophilia 1500. Anemia
- Serologic study for Echinococcal antigen – Negative
- Decision – repeated Chest CT
What would you recommend now?
- Biopsy?
- Continue albendazole
- Wrong diagnosis
Risk of biopsy in echinococcal cyst

- Anaphylaxis
- Cyst leakage and rupture
- Dissemination of cyst content
- Bacterial super-infection
- No enough frequency data
Needle biopsy is still controversial
Contraindicated when diagnosis can be made by standard methods.
It is advised for doubtful cases in absence of antigen; lesion that cannot be distinguish from other conditions
Our decision: Bronchoscopy in both cases
Bronchoscopy case 1
**Pathology**

**Case 1**
- Bronchoscopy multiple endobronchial lesions
- Endobronchial biopsy – Squamous cell Lung Carcinoma

**Case 2**
- Bronchoscopy – no endobronchial lesion seen
- Trans bronchial biopsies from superior segment RLL
- Lymphoma
- MALT type
Life Cycle

- (1) Adult tapeworms in bowels of definitive host
- (2) Eggs passed in feces, ingested by intermediate host
- (3) Onchosphere penetrates intestinal wall, carried via blood vessels to lodge in organs
- (4) Hydatid cysts develop
- (5) Protoscolices (larvae) ingested by definitive host
- (6) Attach to small intestine of definitive host and grow to adult worm.
Echinococcal disease

- Caused by infection with metacestode stage of the tapeworm Echinococcus
- 4 species of Echinococcus produce infection in human
- Most common- E.granulosus and E.multilocularis causing cystic and alveolar echinococcosis
Hydatid disease

- *E. granulosus*
- 75% hepatic involvement, 25% pulmonary
- Cause symptoms with mass effect, rupture, secondary infection
- 60% right lung
- 50-60% in lower lobes
- 30% have multiple cysts in the lungs
- 20% of pts with lung involvement have liver involvement
Diagnosis

- Clinical suspicion
- Imaging (US, CT, MRI)
- Serologic tests
- Biopsy
Diagnosis

- **CXR**: Round or oval mass with smooth borders. No calcifications. If pericyst (fibrous capsule that host makes) incorporates bronchioles, than air penetrates between the pericyst and exocyst creating a meniscus sign or crescent shape.
Diagnosis

- **CT scan**: Thin enhancing ring if cyst is intact. Fluid filled in center. Homogenous.
Laboratory Data

- **Less than 15%** have peripheral eosinophilia, High if leakage of antigenic material
- **Immunodiagnostic testing for serum antibodies:** positive+:
  - 50% for pulmonary,
  - > 90% for hepatic
- False positive if have another parasitic infection
- More likely to have false negative with intact cyst
### Diagnosis – serologic tests

#### Sensitivity of serologic tests for echinococcosis at different sites

<table>
<thead>
<tr>
<th>Site of lesion</th>
<th>Sensitivity of serologic tests</th>
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<tbody>
<tr>
<td>Liver</td>
<td>IgG ELISA: 80-90 percent</td>
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<tr>
<td></td>
<td>IgE ELISA: 82-92 percent</td>
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<tr>
<td></td>
<td>Latex agglutination: 65-75 percent</td>
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<tr>
<td></td>
<td>Hemagglutination: 80-90 percent</td>
</tr>
<tr>
<td></td>
<td>Immunoblot (using antigen 5 and/or a B-rich fraction): 80-90 percent</td>
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<tr>
<td></td>
<td>Enzyme-linked immunotransfer blot: 80 percent</td>
</tr>
<tr>
<td>Lung</td>
<td>IgG ELISA: 60-85 percent</td>
</tr>
<tr>
<td></td>
<td>IgE ELISA: 45-70 percent</td>
</tr>
<tr>
<td></td>
<td>Latex agglutination: 50-70 percent</td>
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<tr>
<td></td>
<td>Hemagglutination: 50-70 percent</td>
</tr>
<tr>
<td></td>
<td>Immunoblot (using antigen 5 and/or a B-rich fraction): 55-70 percent</td>
</tr>
<tr>
<td></td>
<td>Enzyme-linked immunotransfer blot: 55 percent</td>
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</tbody>
</table>
Diagnosis - Biopsy

- By recent studies - fine needle puncture of cyst under anti-helmentic coverage can be rather safe.
- Advised for doubtful cases in absence of antigen; lesion that cannot be distinguish from other conditions.
- Albendazole is recommended 4 days before and 1 month after biopsy.
Conclusions

- Risk of biopsy in patients with echinococcal cysts is relatively low
- Preparation with albendazole 4 days before biopsy is recommended
- Early biopsy prevents delays of treatment and improves outcomes
Thank you for attention