The differential diagnoses of CNS angiostrongyliasis

Kittisak Sawanyawisuth, MD, MAS, PhD
Department of Medicine
Faculty of Medicine
Khon Kaen University
Khon Kaen, Thailand
Angiostrongyliasis (A. cantonensis)

- Central nervous system (CNS)
  - Meningitic angiostrongyliasis
  - Encephalitic angiostroglyliasis
  - Myelitis
- Other forms
  - Radiculitis
  - Ocular
  - GI
Important clinical clue

Causes of CSF eosinophils

- Parasitic
  - *A. cantonensis*
  - *G. spinigerum*
  - *T. solium*
  - *P. westernmani*

- Non-parasitic
  - NSAIDS
  - Malignancy

Neurological manifestations of *A. cantonensis* & *G. spinigerum*

- Meningitis
- Encephalitis
- Myelitis

- Intracerebral hemorrhage
- Subarachnoid hemorrhage
- Myelitis
- Radiculitis
A. cantonensis vs G. spinigerum

- Clinical factors
- History of larva exposure
- Labs
  - Serology tests
  - Imaging studies
Using clinical features to differentiate both parasites
Clinical factors suggestive of gnathostomiasis

- Migratory swelling
- Radicular pain
- Paraparesis
- Hemiparesis
- Bowel bladder involvement
Typical CSF in angiostrongyliasis

Typical CSF in neurognathostomiasis
Risk factor is another crucial factor
Risk factors for angiostrongyliasis

Range 1-90 days, max 6 months, intermediate hosts
Hot dish in our cafeteria
snails salad !!!!
Risk factors for angiostrongyliasis (2)

Range 1-90 days, max 6 months, paratenic hosts
Risk factors for gnathostomiasis

Risk factors last for yearssssssssss
Helpful serological tests
Immunoblotting (Western blot analysis) for detection of specific antibody to *Angiostrongylus cantonensis*

- **P**: positive control (angiostrongyliasis)
- **N**: negative control
- **T**: tested serum

MW marker (KDa)

- 106
- 80
- 49.5
- 32.5
- 27.5
- 18.5

29 or 31 KDa

WESTERN BLOT ANALYSIS (IMMUNOBLOTTING)

Neg: negative control; 1-9: gnathostomiasis serum

Specificity of 29-kDa antigenic bands for angiostrongyliasis

<table>
<thead>
<tr>
<th></th>
<th>Angiostrongyliasis N = 22</th>
<th>Neurognathostomiasis N = 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive 29-kDa</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Negative 29-kDa</td>
<td>0</td>
<td>11</td>
</tr>
</tbody>
</table>

Specificity of the 29-kDa band: 100%

Sawanyawisuth et al. Memorias do Instituto Oswaldo Cruz (in press).
Specificity of 21, 24-kDa antigenic bands for neurognathostomiasis

|                                      | Neurognathostomiasis  
|                                      | \( N = 11 \) | Angiostrongyliasis  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>( N = 22 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive 21- or 24- kDa</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Negative 21- and 24-kDa</td>
<td>0</td>
<td>21</td>
</tr>
</tbody>
</table>

Specificity of the 21-, 24-kDa band: 95.5%

Sawanyawisuth et al. Memorias do Instituto Oswaldo Cruz (in press).
How’s about imaging studies?
What are other DDx?
Rare causes of CSF eosinophils

- *T. canis*: kids, exposure to puppy feces, encephalitis
- *Baylisascaris procyonis*: kids, raccoon feces, encephalitis
- *P. westernmani*: freshwater crabs, cavitary lung lesion, bubble soap appearance (brain calcification)

Summary

- Meningitic and encephalitic angiostrongyliasis typically diagnosed clinically
- Neurognathostomiasis is the main DDx but has quite different clinical presentations
- Serological and imaging studies are main differential clues
Picture courtesy

- Prof. Verajit Chotmongkol
- Prof. Pewpan M. Intapan