Extra-Pulmonary Tuberculosis

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Our First Patient

• 32 year old man from Brazil
• Remote history of gunshot wound

• One month history of:
  - Bilateral lower extremity pain
  - Progressive ataxia
  - Sensory Loss
  - Night sweats
  - Weakness
  - Urge Incontinence
Physical Exam

• Spastic Legs
• Hyper-reflexia
• Sensory Loss

• Cord Lesion (upper motor neuron, sensory neuron) at T4
Possible Imaging Modalities

- **X-ray**
  - Poor sensitivity for spinal injuries
- **CT**
  - Indicated for bony abnormalities and fractures
  - Myelogram - for stenosis or tumors
- **MRI**
  - Spinal cord
  - Blood Clots
  - Disks
  - Soft Tissue Masses
  - Degree of Involvement
An abdominal film was ordered, to determine the presence and location of the bullet from a previous wound.

Beth Israel Deaconess - PACS
MRI - T1 Weighted

T1 Weighted Image Without Contrast

T1 Weighted Image With Contrast
MRI – T2 Weighted

At around T1 (arrow) we see enhancement of the spinal cord, indicating fluid within the cord itself.
Differential Diagnosis

• Patchy Enhancement/Thickening on MR
  - Extrinsic Compression
    • Disk
    • Tumor
  - Infectious
    • TB/Brucellosis/Fungal
  - Inflammatory
    • MS
    • Myelitis
  - Neoplasm
    • Ependymoma, astrocytoma
  - Syringomyelia, Hydromyelia

• Next Step:
  - Cord Biopsy and Culture
Diagnosis: Pott’s Disease

• Tuberculosis involving the Vertebral Bodies

• Interesting Information about Pott’s Disease
  - Evidence of Pott’s Disease has been found in the vertebrae of Egyptian mummies dating from 3000 BC
  - 1-5% of TB cases have skeletal involvement
  - 50% of patients with Pott’s disease have no pulmonary manifestations

• TB is clinically relevant in the U.S.
  - 2-8% of people with HIV will contract TB (CDC)

• TB is clinically relevant worldwide
Global Prevalence of TB

*JAMA. 1999;282:677-686*
Extrapulmonary TB – page 1

• Abdominal
  - Peritonitis
  - Hepato-Splenic

• Genito-Urinary
  - Renal
  - Urethral
  - Bladder
  - Genital

• Lymph Nodes
• Breast
Extrapulmonary TB - page 2

• CNS
  - Meningitis
  - Parenchymal (Tuberculomas)

• Musculoskeletal Involvement
  - Spondylitis (Pott’s Disease)
  - Osteomyelitis
  - Dactylitis
  - Arthritis
Etiology of Musculoskeletal TB

• Hematogenous spread through vertebral arteries

• Soft tissue involvement will result in
  - Abscess (quite large in TB, versus other infections)
  - Phlegmon
Access to the Spinal Column

• Bacteria lodge under the end plate and spread
  - Directly to disk
  - Across the joint space
  - Under the anterior and posterior longitudinal ligaments

Gray's Anatomy
http://www.yahooligans.com/reference/gray/72.html#4
Musculoskeletal TB

• Characteristic features found in our Patient
  - Inflammation of the Spinal Cord

• Other Characteristic Features
  - Preferential Involvement of L1
  - Erosion of Endplates
  - Involvement of multiple vertebral segments
    • Preferentially anterior destruction
    • Resulting in Kyphosis
  - Elongated paravertebral abscess
    • May calcify (Pathognomonic)
  - Narrowing of Joint Space
    • Usually in TB shows relative sparing of joint space, until late in disease
Our Second Patient

• 25 year old man from Kenya

• Four month history of:
  - Pain, tingling, burning of left thigh

• One month history of:
  - Lower back pain

• 9 day history of:
  - Severe left thigh pain

• 5 day history of:
  - Diarrhea, night sweats
Our Second Patient

• Other Relevant History:
  - BCG vaccine
  - 2 years ago lived with a cousin who was diagnosed with TB
Abdominal X-ray

- Characteristic Findings:
  - Narrowing of disk space
  - Involvement of end plate
  - Destruction of vertebral body
Characteristic CT Findings

- Destruction of the vertebral body
- Enhancing region within cord
- Large paravertebral abscess
CT of the Psoas Abscess

Extending into the Pelvis

Extending into the Thigh
CT Coronal View

- Large paravertebral abscess extending from upper kidney to groin
Treatment

Drain the Abscess

IV and Oral Antibiotics

L2-L3 Vertebrectomy
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