62 yo with Altered Mental Status and Lower Extremity Weakness

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History of Present Illness

- 62 year old African American female

- CC: Altered Mental Status
  - Decline over last 4 days
  - Increasing lethargy
  - Decreasing responsiveness to family
Past Medical History

• “Neurosarcoidosis”
  – 2 months prior, lower extremity weakness
  – MRI: T2 spinal cord mass
  – Lymph node biopsy: Noncaseating granulomata, AFB stain negative
  – Started on dexamethasone

• Over next 2 months, several admissions to OSH for low grade fever and failure to thrive.
  – Diagnosed with multiple UTIs and uncontrolled depression
Past Medical History

- Hypertension
- Hypothyroidism
- Schizoaffective disorder
- DVT and PTE s/p IVC filter
- Coronary artery disease s/p PCI
- Neurosyphilis 1999, s/p pcn Rx
Meds/Fam Hx/Soc Hx

• Medications
  – Dexamethasone (8mg/day), levothyroxine, clopidogrel, duloxetine, premarin, ISMN, nifedipine, atorvastatin, tolterodine, esomeprazole

• Family History
  – Mother: deceased secondary to tuberculosis, 60yo

• Social History
  – Single, on disability, lives with sister
  – No tobacco, alcohol, or drug use
Physical Exam

- T 100.4 °F    BP 148/78    HR 88    RR 20
- Obese, AA female
- + cervical lymphadenopathy
- Neuro:
  - Somnolent, but arousable
  - Moves extremities
  - CN II-XII intact
  - BLE: weakness (4/5), babinski (-), DTRs 3+
Laboratory Data

UA: 6-10 WBC, trace LE; Culture negative
CBC, liver function tests, thyroid studies, cortisol - normal
Urine Histo antigen: negative x3

CSF:
  WBC: 191 (46% polys, 53% lymphs)
  Protein: 260 mg/dL
  Glucose: 44 mg/dL
Negative: gram stain, culture (routine, fungal), AFB stain, VDRL, Toxo IgG, ACE
MRI Brain & T-spine

4 mm lesion, medial thalamus

Intramedullary lesion at T2
Course

“Neurosarcoidosis”

Admission

CT: multiple pulmonary nodules
- axillary & retroperitoneal LAN
- adrenal lesions

Day -60 0 9 10 14 34

Biopsy of axillary lymph node: Granulomatous inflammation

Decline

Empiric TB Rx

Death

CSF culture: M. tuberculosis
1 – 6 mm white nodular lesions throughout lungs

Noncaseating granuloma

Caseating granuloma
Acid-Fast Bacilli
Discussion

• Miliary tuberculosis
  – The lymphohematogenous spread of *Mycobacterium tuberculosis*

  – Clinical presentation varies
    • Septic shock with multi-system organ failure
    • Failure to thrive
    • Fever of unknown origin
Clinical Manifestations

- Fever, night sweats, weight loss, and malaise (80-90%)
- Pulmonary symptoms (50%)
- GI symptoms (20%)
- CNS symptoms (15%)

Diagnosis of Miliary TB

- Challenging diagnosis
  - 20% of miliary TB in the U.S. diagnosed postmortem
  - Delay contributes to 25-30% mortality rate

Chest. 1991 Sep; 100(3):678-81.
Diagnosis of Miliary TB

- Obtain as many fluid samples as possible\(^9\)
  - Smear: 6-40% sensitivity
  - Culture: 30-60% sensitivity
    - Sputum, gastric aspirate, urine, serosal fluid, CSF if CNS symptoms
- PPD (positive <50%)
- Mycobacterial blood culture
- CXR, if negative get CT chest
- Dilated eye exam for choroidal tubercles

Diagnosis of Miliary TB

• Consider CT abdomen/pelvis
• Biopsy of lymph nodes, liver, bone marrow, or pulmonary tissue
• Quantiferon®-TB Gold Test
  – Tests interferon gamma release by T-cells in response to M. tuberculosis antigens. (70-80% sensitivity)
• PCR of CSF, sputum sample, or biopsy

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Pathology

- Caseative necrosis
  - Host immune response within the tissue
  - The stage of inflammation

- Most TB granulomata have caseative necrosis (50-90%), but non-caseative granulomata are also frequently found
Take Home Points

• Miliary TB has protean manifestations, requires high index of suspicion

• For diagnosis, often numerous studies are needed

• Noncaseating granulomata may be found in patients with miliary TB

_Lancet Infect Dis 2005;5:415-430_
_Respirology 2001; 6:217-224_
References
