Vertebral osteomyelitis

Sexton, Daniel, and Malcolm McDonald. “Vertebral Osteomyelitis.” UpToDate v11.3.

Key Points:
- Consider vertebral osteomyelitis on the differential for your patients as time to diagnosis may affect outcome
- Clinical symptoms and signs (fever) are insensitive and nonspecific
- MRI is the test of choice, aiding in the diagnosis and assessing for possible need for surgical management (abscess drainage, neurologic decompression, instability)

Background
- Epidemiology
  - Age
  - Male predominance
  - Injection drug use
  - Instrumentation
  - Co-morbidities: diabetes
- Mechanisms: hematogenous, contiguous, direct inoculation (trauma / surgery)
- Causes
  - Staphylococcus aureus
  - Group B & G hemolytic streptococci
  - Enteric gram negative rods
  - Pseudomonas aeruginosa and Candida if lines or IDU
  - Other organisms in developing countries

Clinical presentation
- Back or neck pain: worsening, sores at night, +/- relieved by rest
- Fever: less than 50%
- Physical exam: TTP, +/- mass, of questionable sensitivity
- Labs: ESR (can help follow for treatment response or recurrence), blood cultures (<50% positive)
- Radiography
  - Plan films: late disease
  - CT: limited sensitivity / specificity
  - MRI: test of choice (in one small study, 91% sensitive for <2 weeks duration, 96% sensitive >2 weeks)
  - Radionuclide: sensitive, not specific
- Needle biopsy: variable sensitivity

Therapy
- Antimicrobials: 4-6 weeks or longer (higher failure rates if extensive disease)
- Surgery: abscess drainage, neurologic decompression, or stabilization

Prognosis and outcome (McHenry et al)
- Retrospective study of 253 patients (1950-1994) with mean follow-up 6.5 years (2d-38yrs)
- Co-morbidities: diabetes (31%), alcoholism (11%), IDU smaller %
- 33% acquired VO in hospital (surgery, procedure, hematologic)
- 25% had motor weakness / paralysis: higher for cervical disease, diabetes, advanced age
- Time to diagnosis: median 1.8 months; 28% < 1 month; rarely documented in initial differential diagnosis (24%)
- Outcome: recovery 57%, qualified recovery (persistence of disability) 31%, death 11%
- Risk factors for adverse outcome (qualified recovery or death)
  - Neurologic compromise at time of diagnosis (RR 7.1 [5.0-10.1])
  - Time to diagnosis >2 months (RR 2.3, [1.7-3.1])
  - Hospital acquisition of infection (RR 2.5 [1.7-3.1])
- Risk factors for relapse (36%): recurrent bacteremia, paravertebral abscesses, chronically draining sinuses, happened up to years after first episode
- MRI (43%) was often obtained late, and there was no significant difference between those with good and adverse outcome
- Limitations: retrospective, time span of cases (changes in imaging, neurosurgical experience, antimicrobials, etc), population
- Take-home: consider vertebral osteomyelitis on your differential and consider possibilities of relapse