Musculoskeletal Infection

Orthopaedic Trauma for PAs and NPs
OTA Annual Meeting. October 17, 2018

Objectives

1. Risk factors for infection
2. Clinical, laboratory, and radiographic evaluation
3. Treatment Strategies
4. Prevention

Causes and Risk Factors

Host Factors

- Systemic: immunocompromised, diabetes, advanced age, renal disease, smoking, obesity, drug use
- Local: peripheral vascular disease, venous stasis, skin lesions, neuropathy, history of radiation Rx

Injury-related Factors

Open fractures (especially tibia), gross contamination, amount of soft tissue injury/periosteal stripping, fracture blisters/swelling, need for soft tissue coverage

Technical Factors

Infection more common after ORIF.
Avoid excessive soft tissue damage during surgery.
Quality of debridement.
Time to antibiotics and debridement.

Clinical Evaluation

Pain, swelling, erythema, fluctuance, drainage, sinus tracts, non-healing wounds, dehiscence

Laboratory Evaluation

- WBC: Can be elevated in acute infection, often normal in chronic infections. Not very sensitive.
- ESR: Elevated in >90% of infections, but can be normally elevated for up to 6 mos after surgery. Not very specific.
- CRP: Can be elevated for up to 3 weeks postop. More sensitive than ESR. Good for tracking treatment response.

Intraoperative cultures – gold standard for diagnosis

Radiographic Evaluation

Serial plain radiographs: most important. Look for lucency around screws, screws backing out, soft-tissue swelling, catastrophic hardware failure and/or loss of reduction

Consider advanced imaging if it will change your treatment:

- CT – can identify soft tissue abscess/fluid collections, air/gas, presence or absence of union
- MRI – can provide some fine details about the infection, including extent of osteomyelitis. Consider administration of contrast
- Tagged WBC scan – most expensive and likely lest effective study.

Treatment Strategies

Timely debridement with intraoperative cultures
Consider whether hardware can be retained or needs to be removed – is the fracture healed, or does it need stability?
Infectious disease consultation
Appropriate management of medical co-morbidities
Set patient expectations and outline treatment plan

Prevention

Immediate antibiotic administration for open fractures with a timely debridement
Meticulous soft tissue handling and wound closure
Manage medical co-morbidities

Reference: Achor TS and Gary JL. Diagnosis and management of infection associated with fractures and nonunions. In Ricci WM and Ostrum RF, eds. *Orthopaedic Knowledge Update: Trauma 5*. Rosemont, IL, American Academy of Orthopaedic Surgeons; 2016:141-158.