

Musculoskeletal Infection

Orthopaedic Trauma for PAs and NPs
OTA Annual Meeting, October 5, 2016

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 least 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