ROLE OF SURGERY IN OSTEOMYELITIS

Monara Dini, DPM
Department of Orthopedic Surgery
UCSF/SFGH

Prevalence of Osteomyelitis

- Osteomyelitis
  - 10-15% mild infections
  - 50% severe infections

Osteomyelitis Diagnosis

- Probe to bone test (PTB)
  - sensitivity 66%, specificity 85%
- ESR >70mm/h
  - sensitivity 28%, specificity 100%
- Plain radiography
  - sensitivity 54%, specificity 68%
- Radionuclide bone scan
  - sensitivity 86%, specificity 50%
- MRI
  - sensitivity 90%, specificity 79%

Osteomyelitis Definitive Diagnosis

- Bone biopsy:
  - Specimens obtained either percutaneously or at operation subjected to both histological and microbiological analysis is the reference standard for bone infection.
Antibiotics vs Surgery

- Port of entry?
- Recurrence?
- Soft tissue infection vs osteomyelitis?

Exclusively Antibiotic-Based Treatment

In summary all three of these studies have pitfalls. Although remission rates were high the studies:

- lacked histopathological/microbiological confirmation of OM
- lacked complete wound closure
- involved primarily the forefoot
- Sharp debridement was performed when deemed necessary
- remission does not indicate cure.

Table 1. Antibiotic-Based Recent Series

<table>
<thead>
<tr>
<th>Reference</th>
<th>Remission Criteria</th>
<th>Comments</th>
<th>Bone Biopsy</th>
<th>Percentage Remission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embhi et al.</td>
<td>Resolution of clinical findings. The term healed was used with caution because of potential for osteomyelitis relapse after therapy</td>
<td>Bone debridement when necessary</td>
<td>No</td>
<td>80.5%</td>
</tr>
<tr>
<td>Seneels et al.</td>
<td>Absence of any sign of infection at the initial or contiguous site</td>
<td>Only noninvasive patients, not X-ray bone destruction</td>
<td>Apparent remission</td>
<td>Only for microbiological purpose in 5% of the patients</td>
</tr>
<tr>
<td>Game and Jeffrey</td>
<td>Patient survival with limb intact</td>
<td></td>
<td>No</td>
<td>82.3%</td>
</tr>
</tbody>
</table>

Exclusively Antibiotic-Based Treatment

IDSA Guidelines

- 4 situations in which nonsurgical management of osteomyelitis might be considered:
  - No applicable surgical target
  - Irreparable vascular disease
  - Infection confined to forefoot
  - Surgical management carries excessive risk
Diabetic Foot Surgery Classification

<table>
<thead>
<tr>
<th>Class</th>
<th>Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>elective</td>
<td>Procedure performed on patient with protective sensation intact to eliminate pain or to improve function</td>
</tr>
<tr>
<td>2</td>
<td>prophylactic</td>
<td>Procedure performed on patient with protective sensation absent but no open wound to reduce deformity and reduce occurrences of recurrence</td>
</tr>
<tr>
<td>3</td>
<td>curative</td>
<td>Procedure performed on patient with an open wound with the goal of promoting healing and reducing risk for recurrence</td>
</tr>
<tr>
<td>4</td>
<td>emergency</td>
<td>Procedure performed with goal of limiting the spread of limb- or life-threatening infection</td>
</tr>
</tbody>
</table>

Amputation as “Standard” Surgical Treatment

Antibiotic treatment achieves apparent remission

Combined approach of conservative surgery and antibiotics leads to lowest major amputation rates

Conclusion

- Antibiotic treatment achieves apparent remission
- Combined approach of conservative surgery and antibiotics leads to lowest major amputation rates