Peripheral Arterial Disease in Charcot Arthropathy

Michael Edmonds
Disclosure

Speaker name:
Michael Edmonds

I have the following potential conflicts of interest to report:

☒ Consulting Urgo.Bayer.
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)
☐ I do not have any potential conflict of interest
Charcot foot

Minimal trauma

Small fibre neuropathy
Disruption of ankle and hind foot
Charcot Foot: Natural History
Ischemic Charcot foot: different disease with different treatment?

L. M. PALENA 1, E. BROCCO 2, S. NINKOVIC 2, A. VOLPE 3, M. MANZI 1

<table>
<thead>
<tr>
<th>Table 1.—Demographics and clinical conditions of patients affected by ischemic Charcot foot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
</tr>
<tr>
<td>N.</td>
</tr>
<tr>
<td>Mean age (y)</td>
</tr>
<tr>
<td>Male gender</td>
</tr>
<tr>
<td>Risk factors</td>
</tr>
<tr>
<td>Diabetes</td>
</tr>
<tr>
<td>Hypertension</td>
</tr>
<tr>
<td>Dyslipidemia</td>
</tr>
<tr>
<td>Coronary artery disease</td>
</tr>
<tr>
<td>Chronic renal failure</td>
</tr>
<tr>
<td>Rutherford class</td>
</tr>
<tr>
<td>Class 6</td>
</tr>
<tr>
<td>Texas University Classification (TUC)</td>
</tr>
<tr>
<td>III-D (ischemic and infected lesion)</td>
</tr>
</tbody>
</table>

Continuous variable are reported as mean±standard deviation. Categorical variables are reported as N. (%).
• 69 patients had radiological confirmed Charcot joint on X-ray, SPECT-CT or MRI.

• 44(64%) patients had PAD on arterial duplex scan
Distribution of the PAD

- Femoral-popliteal: 9%
- Infra-popliteal: 46%
- Both: 45%
Charcot joint with PAD

• 34/44 (77%) patients required revascularization.

  ➢ 19 (43%) had an endovascular (angioplasty) revascularisation

  ➢ 15 (34%) patients open (bypass) revascularization
Endovascular revascularization

Distribution of angioplasty

- Femoral-popliteal: 32%
- Infra-popliteal: 26%
- Both: 42%
Open revascularization

Distribution of bypass

- Ultra Distal bypass: 27%
- Femoral-popliteal bypass: 20%
- Infra-popliteal Distal bypass: 53%
Orthopaedic reconstruction

• 22/69 (32%) patients had undergone orthopaedic procedures

➤ 10 (14%) debridement / minor amputation

➤ 12 (17%) underwent a total of 16 major orthopaedic Charcot foot reconstruction surgery
Popliteal to Anterior Tibial Artery Bypass
Challenging scenario
Internal reconstruction
Immediate post-operative
Options
Revascularisation
Immediate vascular reconstruction

Before

After
# Prevalence of PAD in Charcot Arthropathy

<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Prevalence (%)</th>
<th>Total population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sohn</td>
<td>2008</td>
<td>26.9</td>
<td>1050</td>
</tr>
<tr>
<td>Bem</td>
<td>2015</td>
<td>35.4</td>
<td>82</td>
</tr>
<tr>
<td>Wukich</td>
<td>2016</td>
<td>40.0</td>
<td>85</td>
</tr>
<tr>
<td>Iacopi</td>
<td>2018</td>
<td>62.2</td>
<td>436</td>
</tr>
<tr>
<td>Orioli</td>
<td>2018</td>
<td>66.2</td>
<td>56</td>
</tr>
</tbody>
</table>
Osteoclastic differentiation and increased bone resorption

Osteoblastic differentiation and deposition of mineralized matrix
Small fibre neuropathy

- Osteolysis
  - Fracture/subluxation
    - Charcot arthropathy
- Arterial calcification
  - Atherosclerosis
Conclusion

• Clinicians should no longer consider Charcot foot as free from PAD

• Prevalence of PAD in Charcot population is significantly high

• Early revascularization might be required

• Multidisciplinary team approach is crucial
Angioplasty
Angioplasty
Peripheral Arterial Disease in Charcot Arthropathy

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