Endovascular Treatment Of Berger’s Disease: Techniques And Results

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Disclosures

I have nothing to Disclose

Buerger’s Disease

• Non-atherosclerotic, non-inflammatory, segmental occlusive disease of unknown origin affecting the medium and small arteries and veins of young male
• Tobacco use has a strong link to the pathogenesis and progression
• Endarteritis introduced by T-cells and B-cells mediated immunity with the activation of macrophages in intima

Diagnostic criteria of Shionoya (1998)

• Smoking history
• Onset before the age of 50 years
• Infra-popliteal and infra-brachial arterial occlusions
• Either arm involvement or phlebitis migrans
• Absence of atherosclerotic risk factors other than smoking


Shionoya’s Diagnostic Criteria

• Special arteriographic findings: abrupt or tapering occlusion, cocksure collaterals, and absence of calcification or moth-eaten stenoses
• Exclusion criteria: patients with hypertension, diabetes mellitus, hyperlipidemia, ischemic heart disease, cerebrovascular disease, hypercoagulable state or collagen disease


Patterns of Arterial lesion in TAO

Shionoya’s Diagnostic Criteria

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Presenting symptoms of the 78 patients with Buerger’s Disease on 108 admissions

<table>
<thead>
<tr>
<th>Presenting symptoms</th>
<th>Admission for recurrence (n = 87)</th>
<th>First admission (n = 41)</th>
<th>Total (n = 108)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burning pain on feet and hands</td>
<td>46 (48.6%)</td>
<td>35 (85.3%)</td>
<td>81 (75%)</td>
</tr>
<tr>
<td>Digital gangrene</td>
<td>48 (71.6%)</td>
<td>2 (50%)</td>
<td>50 (46.3%)</td>
</tr>
<tr>
<td>Raynaud’s phenomenon</td>
<td>21 (31.3%)</td>
<td>2 (50%)</td>
<td>23 (21.1%)</td>
</tr>
<tr>
<td>Digital ulcer</td>
<td>28 (40.9%)</td>
<td>21 (51.2%)</td>
<td>49 (45.2%)</td>
</tr>
<tr>
<td>Foot and calf claudication</td>
<td>25 (37.3%)</td>
<td>10 (46.5%)</td>
<td>35 (32.1%)</td>
</tr>
<tr>
<td>Migratory thrombophlebitis</td>
<td>9 (13.4%)</td>
<td>1 (2.4%)</td>
<td>10 (9.2%)</td>
</tr>
<tr>
<td>Forefoot gangrene</td>
<td>7 (10.4%)</td>
<td>2 (4.8%)</td>
<td>9 (8.3%)</td>
</tr>
</tbody>
</table>


Clinical Manifestations

The prevalence of TAO as a percentage of PAD in particular countries based on: Olin (1), Wysokin’ski et al. (2), Kobayashi et al. (3), Laohapensang et al. (4), Ates et al. (5) R Matecki et al. Atherosclerosis. 2009; 206: 328-334.

The prevalence of TAO as a percentage of PAD is decreasing due to:

- Adoption of precise diagnostic criteria
- Reduction in smoking
- Change in the occupations


Facts about Buerger’s Disease

- Stop smoking is the most effective therapy
- Only 11.5% (9/78) of the patients stopped smoking
- The risk of amputation is eliminated by 8 years after smoking cessation
- Arterial reconstructions were feasible in 10.2% (11/78) of TAO cases
- The necrotic lesions subsides after the age of 60


Current Treatment:

Discontinuation of tobacco

Various medications
vasodilators (calcium channel blockers and prostaglandin analogues)
anticoagulants
thrombolytics

Noninvasive treatments
intermittent pneumatic compression

Invasive approaches
omental transfer
sympathectomy
Surgical Treatment of Buerger’s disease 1988-2002

**Table 1.** Surgical treatment of the 76 patients with Buerger’s disease on 108 admissions

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Recurrent admission patients (n = 37)</th>
<th>New admission patients (n = 41)</th>
<th>Total admissions (n = 108)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artificial reconstruction</td>
<td>4 (10.8%)</td>
<td>7 (17%)</td>
<td>11 (10.2%)</td>
</tr>
<tr>
<td>Sympathectomy</td>
<td>11 (25.1%)</td>
<td>21 (50%)</td>
<td>32 (29.6%)</td>
</tr>
<tr>
<td>Amputation</td>
<td></td>
<td>1 (2.7%)</td>
<td>1 (0.9%)</td>
</tr>
<tr>
<td>Below knee</td>
<td>3 (6.1%)</td>
<td>1 (2.4%)</td>
<td>4 (3.8%)</td>
</tr>
<tr>
<td>Symptomatic</td>
<td>2 (4.4%)</td>
<td>1 (2.4%)</td>
<td>3 (2.7%)</td>
</tr>
<tr>
<td>Transmetatarsal</td>
<td>2 (4.4%)</td>
<td>1 (2.4%)</td>
<td>3 (2.7%)</td>
</tr>
<tr>
<td>Digital</td>
<td>33 (68.2%)</td>
<td>34 (82.9%)</td>
<td>67 (62%)</td>
</tr>
</tbody>
</table>

Some patients underwent more than one operation.


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**Revascularization**

- Revascularization is the ideal treatment to reduce ischemic injuries
- Surgical revascularization is often not feasible because of diseased distal runoff and diffuse segmental involvement and thrombotic nature of the disease
- Lack of distal targets for bypass and absence of adequate vein conduit
- Bypass surgery was carried out for less than 10% of surgically treated patients

Endovascular treatment for patient with Buerger's disease

- Majority of patients with CLI are poor candidates for surgical bypass, endovascular approaches should be considered
- Percutaneous transluminal angioplasty (PTA) of infrapopliteal arteries and can be an effective option
- Prolonged balloon inflation has been recommended for PTA
- Selective stent placement can be considered for residual stenosis, vessel recoil, or dissection
- Re-intervention is possible

Endovascular treatment for patient with Buerger's disease

- Endovascular treatment should be considered for effective recanalization if a surgical treatment option is not available
- Endovascular treatment should be considered as a primary therapeutic choice


Thank you for Attention