Current Trends In PAD

F. Dwight Chrisman, MD, FACC

Disclosures:
Boehringer Ingelheim
- Speaker Bureau
Outline

• Prevalence
• Risk Factors
• Guidelines
• Diagnosis/Referral
• Evaluation
• Anatomy
  – Location treatment trends/options

Prevalence of PAD

• Estimated that 12 million in US affected
  – 200 million worldwide
• Estimated 1 million with limb loss due to DM
Risk Factors

<table>
<thead>
<tr>
<th>PAD Risk Factors</th>
<th>OR (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAD</td>
<td>2.27</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Smoker</td>
<td>2.09</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Ex-Smoker</td>
<td>1.87</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>C-Reactive Protein</td>
<td>1.69</td>
<td>0.01</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1.68</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>HTN</td>
<td>1.47</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Age</td>
<td>1.39</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Hypertriglyceridemia</td>
<td>1.22</td>
<td>0.0002</td>
</tr>
<tr>
<td>Hypercholesterolemia</td>
<td>1.16</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Male Sex</td>
<td>0.83</td>
<td>0.001</td>
</tr>
<tr>
<td>BMI (&gt;25)</td>
<td>0.83</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>


2016 Guidelines

Class I
- Hx/symptoms suggest PAD – complete ABI
- Doppler/CTA/MRA – when revasc. Considered
- ASA (81-325mg) or Plavix (75mg) alone to reduce MI, CVA, vascular death
- Treatment with a statin
- Antihypertensive therapy to reduce MI, CVA, CHF and CV death
- Smoking cessation
- DM management
- Cilostazol if effective to improve symptoms and increase walking distance
- Supervised exercise program
- Revascularize with lifestyle-limiting claudication and significant aortoiliac disease
- With CLI – revascularize to minimize tissue loss
- With ALI – administer heparin and catheter-based thrombolysis when possible
2016 Guidelines

IIa
Increased risk but no signs/symptoms – ABI reasonable
Revascularization with limiting claudication and inadequate GDMT

IIb
Dual-antiplatelet therapy (ASA and clopidogrel) to reduce risk of events

III
No symptoms and no risk – do not complete ABI
Asymptomatic PVD – no Doppler, CTA or MRA
Anticoagulation should not be used to reduce risk of CV events
Endovascular or surgical procedures not indicated to just prevent progression
Diagnosis – When to Refer

• Symptoms/Signs
  – Embolic events
  – Bruit
  – Claudication
  – Ulceration
  – Excessive HTN - >4 meds
  – Unexplained edema

Evaluation

• CTA
  – Office based
  – Establish treatment plan/options
  – Have equipment ready
  – Establish access point
• MRA
• Angiography
  – With associated intervention
Anatomy

Stroke

- Acute Stroke Program
  - Within three hours of initial symptoms
  - Neurology evaluation
  - Interventional Radiology
    - Trap thrombus
      - Localized lytic therapy
    - Thrombectomy
    - Angioplasty/stent
Stroke

Carotid Stenosis

- Versus CEA
- Carotid Intervention
  - Distal embolic protection
    - Multiple designs
  - Stent design
    - Open versus closed cell
  - Stroke risk
Carotid Stenosis

Subclavian Stenosis

- Arm claudication
  - Decreased pulse
  - Intervention
    - Stent placement
    - Vertebral Caution
Subclavian Stenosis

Aortic Aneurysm

- Thoracic Aorta
  - Stent placement
- Abdominal Aorta
  - Stent placement
  - Iliac involvement
Aortic Aneurysm

Renal Artery Stenosis

• Criteria for intervention
  – Renal dysfunction progression
  – >50% stenosis
  – Bilateral
  – Intervention – stent placement
Renal Artery Stenosis

Renal Ablation

- Treatment for refractory HTN
  - Gained momentum
    - Setback with US study outcomes
    - Companies readdressing with technology
  - Treatment
    - Ablation of the sympathetic system
    - Via renal artery wall
Renal Ablation

Radiofrequency ablation of sympathetic fibers

Lower Extremity Intervention

- Rutherford Classification
  - 0  Asymptomatic
  - 1  Mild Claudication
  - 2  Moderate Claudication
  - 3  Severe Claudication
  - 4  Rest Pain
  - 5  Ulcer
  - 6  Advanced Ulcer, Gangrene
Physical Examination

- Absent or diminished pulses
- Arterial bruits
- Hair loss
- Ulceration/Skin changes

Iliofemoral Artery Intervention

- Iliac artery
  - Stent still proven excellent results
    - 89.9% patency at one year
  - Long term durability
- Common femoral artery
  - Options expanding
    - Drug eluting balloon angioplasty
    - Athrectomy
Iliofemoral Intervention

Superficial Femoral Artery Intervention

- SFA
  - Multiple and expanding options
  - Hotbed of research
    - Angioplasty
    - Athrectomy – laser/cutting
      - 78% patency at 12 months
    - Stent
    - Drug eluting angioplasty
      - 2 year superior to POBA
      - 78.6% patency
    - Drug eluting stent
      - 96% patency at one year (MAJESTIC trial)
SFA Intervention

3D stent geometry accommodates loading in SFA
- Ideal mechanical implant would mimic rather than resist the vessel

Transluminal Catheter
- Directional
- Rotational

Types of Atherectomy

Popliteal Artery Intervention

- Limitations
  - Due to flexibility
- Treatment Options
  - Balloon angioplasty
  - Athrectomy
  - Drug eluting balloon angioplasty
  - Stent Technology
    - Flexibility without fracture
Popliteal Tortuosity

Below the Knee Intervention

- Limitations due to size
- Expanding options
  - Balloon angioplasty
  - Athrectomy – laser/cutting
  - Drug eluting balloon angioplasty
  - Drug eluting stent +/-
Below the Knee Intervention

Lower Extremity Venous Therapy

- Symptoms
  - Ache
  - Swelling
  - Varicose veins

- Signs
  - Skin changes
  - Ulcerations
  - Venous Reflux on Doppler evaluation
Lower Extremity Venous Therapy

- Treatment
  - Venous Ablation
    - Radiofrequency
    - Laser
  - Non-thermal Ablation
    - Injection of sclerosing agent
    - Foam therapy
    - Glue
  - Stab Phlebectomy
Stab Phlebectomy

Summary

- Peripheral Arterial Disease Treatment
  - Continues to evolve
    - Stent technology
    - Plaque modification technology
  - Drug elution therapy strong trend
  - Plaque modification strong trend
  - Combination treatment options
- Venous Leg Therapy Treatment
  - Evolving techniques/technology
  - Focus on patient comfort
Thank You
Dwight Chrisman, MD, FACC
Interventional Cardiology and Peripheral Interventions