Peripheral Arterial Occlusive Disease - The Challenge in patients with diabetes

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Introduction

- Vascular disease is a major cause of mortality in the West
- Accounts for >40% of deaths in the UK
- Atherosclerosis is the underlying cause
Background

- Common
- 4.5% 55-74 yrs symptomatic claudication
- 20% elderly men
Co-existence of Coronary, Cerebral and Peripheral Vascular Disease

Prevalence of vascular disease in a population 62 years of age and over

- Coronary artery disease: 21%
- Peripheral vascular disease: 9%
- Cerebrovascular disease: 8%
- Coronary artery disease and Peripheral vascular disease: 5%
- Coronary artery disease and Cerebrovascular disease: 3%
- Peripheral vascular disease and Cerebrovascular disease: 9%
Athero-thrombosis affects many vascular beds

- Ischaemic stroke
- Transient ischaemic attack
- Myocardial infarction
- Angina: Stable Unstable
- Peripheral arterial disease:
  - Intermittent claudication
  - Rest pain
  - Gangrene
  - Necrosis
- Renovascular disease
- Diabetes (type 2)
  Often considered vascular equivalent to a non-diabetic patient with previous MI²

Adapted from: Drouet L. Cerebrovasc Dis 2002; 13(Suppl 1): 1–6
Clinical Presentation

- Acutely with threatened limb (6 P’s)
- Chronically with IC, rest pain, ulceration or gangrene
- Associated coronary artery disease
- Associated cerebral arterial disease
The six P’s

- Pain
- Pallor
- Paralysis
- Parasthesia
- Pulseless
- Perishing cold
Clinical Assessment

- History of presenting complaint
- Risk factors
- Coronary symptoms
- Cerebral symptoms
Risk Factors

- Tobacco Smoking
- Hypertension
- Hypercholesterolaemia
- Diabetes Mellitus
- Family History
Implication for patients

- Degree of Handicap?
- Extent of Disability?
- Quality of Life
- Lifestyle Limitation
Investigation

- Laboratory
- ECG
- ABPI
- Lifestyle limitation
Objective Assessment

- Treadmill
- Corridor Walking Test
- 6 Minute Walking Test
- Quality of Life assessment
- Activity restriction list!!
Further Investigation

- Depends of impact to patient
- Duplex scan
- Angiography
- CT angiography
- MRA
- Cardiac assessment
<table>
<thead>
<tr>
<th>Outcome</th>
<th>Dormandy 1991</th>
<th>Leng 1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td>1,966</td>
<td>116</td>
</tr>
<tr>
<td>Follow up</td>
<td>1 year</td>
<td>5 years</td>
</tr>
<tr>
<td>Reconstruction</td>
<td>5 %</td>
<td>10%</td>
</tr>
<tr>
<td>Amputation</td>
<td>1.6%</td>
<td>5%</td>
</tr>
</tbody>
</table>
One event leads to another

Original Event = Stroke
MI Risk
• 2-3 x greater risk\(^2\)*
Stroke Risk
• 9 x greater risk\(^3\)

Original Event = MI
MI Risk
• 5-7 x greater risk\(^1+\)
Stroke Risk
• 3-4 x greater risk\(^2++\)

Original Condition = PAD
MI Risk
• 4 x greater risk\(^4++\)
Stroke Risk
• 2-3 x greater risk\(^3++\)

Diabetes (type 2)
Because of the increased risk associated with diabetes, it should be considered a cardiovascular risk equivalent to a non-diabetic patient with previous MI

*Includes angina and sudden death. Sudden death defined as death documented within 1 hour and attributed to coronary heart disease (CHD)
+ Includes death
++Includes TIA

Patients with Type 2 diabetes are a high cardiovascular risk group

7-yr incidence of cardiovascular events (%)

Prior MI (no diabetes)

<table>
<thead>
<tr>
<th>Event</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI</td>
<td>18.8%</td>
</tr>
<tr>
<td>CV* Death</td>
<td>15.9%</td>
</tr>
<tr>
<td>Stroke</td>
<td>7.2%</td>
</tr>
</tbody>
</table>

Type 2 diabetes (no prior MI)

<table>
<thead>
<tr>
<th>Event</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI</td>
<td>20.2%</td>
</tr>
<tr>
<td>CV* Death</td>
<td>15.4%</td>
</tr>
<tr>
<td>Stroke</td>
<td>10.3%</td>
</tr>
</tbody>
</table>

*CV = cardiovascular

PAOD doubles risk

1. Adapted from Steg PG et al. JAMA 2007; 297: 1197-1206
Typical UK General Practice with Disease in Two Vascular Beds

- Approximately 1.3 million patients with MVD in UK
- 87% of 1.3 million = 1.1m patients approximately
- 36,016 UK Full Time Equivalent GPs
- 31 patients with disease in 2 beds per GP

Patients with 2 vascular locations have a risk of CV death/MI/stroke or hospitalisation within 12 months:

- CAD+CVD = 20%
- CAD+PAD = 23%
- CVD+PAD = 22%

- Din Link data on file
- Steg GL et al. JAMA 2007;297(11):1197-1206
Mortality

Survival

5 yrs  70%  (90% controls)

10 yrs  50%

15 yrs  30%
### Risk factors for progression of IC

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>2</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1.4</td>
</tr>
<tr>
<td>Age</td>
<td>1.2</td>
</tr>
<tr>
<td>Male gender</td>
<td>1.7</td>
</tr>
<tr>
<td>Hypercholesterolaemia</td>
<td>no studies</td>
</tr>
</tbody>
</table>


Treatment Options

- Risk Factor Modification
- Exercise
- Angioplasty (PTA)
- PTA plus Stent
- Endarterectomy
- Bypass Surgery
Risk factor Modification

- Smoking cessation
- BP control
- Lipid lowering
- Glycaemic control
- Antiplatelet agent
- Weight reduction
- Exercise programme
## Managing Diabetes

### Guideline:
- HbA\(_1c\)  
  \(< 6.5–7.5\%\)
- Blood pressure  
  \(< 130/80 \text{ mmHg}\)
- Total cholesterol  
  \(< 4 \text{ mmol/l}\)
- LDL cholesterol  
  \(< 2 \text{ mmol/l}\)
- Use low-dose aspirin

### JBS2\(^1\)
- HbA\(_1c\)  
  \(< 6.5–7.5\%\)
- Blood pressure  
  \(< 140/80 \text{ mmHg}\)
- Total cholesterol  
  \(< 4 \text{ mmol/l}\)
- LDL cholesterol  
  \(< 2 \text{ mmol/l}\)

### SIGN (2001)\(^2\)
- HbA\(_1c\)  
  \(\sim 7\%\)
- Blood pressure  
  \(< 140/80 \text{ mmHg}\)
- Total cholesterol  
  \(< 5 \text{ mmol/l}\)
- LDL cholesterol  
  NONE

### QOF targets (41 pts)\(^3\):
- HbA\(_1c\)  
  \(< 7.5\%\)
- Blood Pressure  
  \(< 145/85 \text{ mmHg}\)
- Total cholesterol  
  \(< 5 \text{ mmol/l}\)

### Records of:
- BP
- BMI
- Total cholesterol
- HbA\(_1c\)
- Neuropathy testing, micro-albuminuria testing

### QOF threshold:
- 40-50%
- 40-60%
- 40-70%
- 40-90%
- 40-90%
- 40-90%

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Presentations in patients with diabetes

- Incidental on screening
- Co-existing disease in other beds
- Claudication
- Atrophic changes in feet
- Ulceration
- Foot infections
- Rest Pain
Assessments in patients with diabetes

- History
- Examination
  - Look between toes
  - Look at heels
  - Check for sensation
  - Palpate pulses
- ABPI with caution
Special needs in patients with diabetes

- Aggressive risk factor modification
- Good footcare and regular self examination
- Access to podiatry
- Early referral for vascular review
- Beware Infections – rapid deterioration potential
Any questions?

Or maybe clear as mud?