ESC Guidelines on the diagnosis and treatment of peripheral artery diseases

Document covering atherosclerotic disease of extracranial carotid and vertebral, mesenteric, renal, upper and lower extremity arteries

The Task Force on the Diagnosis and Treatment of Peripheral Artery Diseases of the European Society of Cardiology (ESC)

*Endorsed by the European Stroke Organisation (ESO)
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Conflicts of interest

Disclosure forms of all Task Force members and reviewers are available on the ESC Website

http://www.escardio.org/guidelines
### Classes of recommendations

<table>
<thead>
<tr>
<th>Classes of Recommendations</th>
<th>Definition</th>
<th>Suggested wording to use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class I</strong></td>
<td>Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.</td>
<td>Is recommended/is indicated</td>
</tr>
<tr>
<td><strong>Class II</strong></td>
<td>Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.</td>
<td></td>
</tr>
<tr>
<td><strong>Class IIa</strong></td>
<td>Weight of evidence/opinion is in favour of usefulness/efficacy.</td>
<td>Should be considered</td>
</tr>
<tr>
<td><strong>Class IIb</strong></td>
<td>Usefulness/efficacy is less well established by evidence/opinion.</td>
<td>May be considered</td>
</tr>
<tr>
<td><strong>Class III</strong></td>
<td>Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.</td>
<td>Is not recommended</td>
</tr>
</tbody>
</table>
## Levels of evidence

<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Evidence A</td>
<td>Data derived from multiple randomized clinical trials or meta-analyses.</td>
</tr>
<tr>
<td>Level of Evidence B</td>
<td>Data derived from a single randomized clinical trial or large non-randomized studies.</td>
</tr>
<tr>
<td>Level of Evidence C</td>
<td>Consensus of opinion of the experts and/or small studies, retrospective studies, registries.</td>
</tr>
</tbody>
</table>
ESC Guidelines on the Diagnosis and Treatment of Peripheral Artery Diseases

Scope of the problem

Professor FGR Fowkes
Centre for Population Health Sciences
University of Edinburgh
Sites of Peripheral Atherosclerosis

- Lower extremity
- Carotid
- Renal
- Upper extremity
- Vertebral
- Mesenteric
Lower Extremity Artery Disease

Population prevalence of ABI <0.9 in Sweden

Prevalence % (95% CI)

Age (years)

Men
Women

60-64
65-69
70-74
75-79
80-84
85-90
Lower Extremity Artery Disease

Lifetime symptomatic progress of claudicants referred to hospital

Symptom free 1/3

Same 1/3 – 1/2

Worse 1/4 \(\rightarrow\) Amputation <5%

3 times increased risk of cardiovascular event and death
## Carotid Artery Disease

Prevalence of right internal carotid artery stenosis (≥ 35% lumen reduction) or occlusion in Tromso population study

<table>
<thead>
<tr>
<th>Age years</th>
<th>Women % (95% CI)</th>
<th>Men % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-49</td>
<td>0 (0.5-1.9)</td>
<td>0 (1.0-2.8)</td>
</tr>
<tr>
<td>50-59</td>
<td>1.1 (0.5-1.9)</td>
<td>1.7 (1.0-2.8)</td>
</tr>
<tr>
<td>60-69</td>
<td>2.1 (1.5-3.0)</td>
<td>4.4 (3.3-5.6)</td>
</tr>
<tr>
<td>70-84</td>
<td>7.1 (5.4-9.1)</td>
<td>9.4 (7.2-11.9)</td>
</tr>
<tr>
<td>All</td>
<td>2.7 (2.2-3.3)</td>
<td>3.8 (3.2-4.6)</td>
</tr>
</tbody>
</table>

Proportion of stenoses ≥70%

- Women: 1 in 5
- Men: 1 in 3
Carotid Artery Disease

5 year risk of ipsilateral stroke by degree of stenosis in symptomatic and asymptomatic patients (NASCET)

5 year risk of ipsilateral stroke (%)

Degree of stenosis on angiography

Inzitari et al. NEJM 2000; 342: 1693
Renal Artery Disease

- 7% of elderly over 65 have renal artery stenosis ≥ 60%
- Prevalence higher in men than women
- Increases with age
- Much higher if other peripheral artery disease (25% in those with lower extremity disease)

Renal artery disease → renal failure; hypertension; death

De Mast et al J Hypertens 2009; 27: 1333
Upper Extremity Artery Disease

Subclavian stenosis in >2% adults

Mostly asymptomatic
Vertebral Artery Disease

Population prevalence unknown

1 in 20 strokes/TIA related to extracranial vertebro-basilar disease
Mesenteric Artery Disease

Population prevalence unknown

Rarely progresses to intestinal ischaemia and only if severe multivessel atherosclerosis

Multi-site Artery Disease

- The presence of atherosclerotic disease at one vascular site increases the frequency of symptomatic and asymptomatic disease at another site.

- Such finding indicates the need for heightened awareness of atherosclerotic disease at sites other than the presenting one.

- This is especially true in the elderly, in whom the overlap of coronary artery disease, carotid artery disease and lower extremity artery disease is particularly high.
# General Treatment Rules in Patients with PAD

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients with PAD who smoke should be advised to stop smoking.</td>
<td>I</td>
<td>B</td>
</tr>
<tr>
<td>All patients with PAD should have their LDL cholesterol lowered to &lt;2.5 mmol/L (100 mg/dl), and optimally to &lt;1.8 mmol/L (70 mg/dl) or &gt;50% when target level cannot be reached.</td>
<td>I</td>
<td>C*</td>
</tr>
<tr>
<td>All patients with PAD should have their blood pressure controlled to ≤140/90 mmHg.</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>Beta-blockers are not contraindicated in patients with LEAD, and should be considered in cases of concomitant coronary artery disease and/or heart failure.</td>
<td>IIa</td>
<td>B</td>
</tr>
<tr>
<td>Antiplatelet therapy is recommended in patients with symptomatic PAD.</td>
<td>I</td>
<td>C*</td>
</tr>
<tr>
<td>In patients with PAD and diabetes, HbA1c level should be kept at ≤6.5%.</td>
<td>I</td>
<td>C*</td>
</tr>
<tr>
<td>In patients with PAD a multidisciplinary approach is recommended to establish management strategy.</td>
<td>I</td>
<td>C</td>
</tr>
</tbody>
</table>

*Evidence is not available for all sites.*