Common Cardiovascular Concerns: What Primary Care Physicians Need to Know

Peripheral Artery Disease

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Atherosclerosis: affects all arteries in body; includes coronary artery disease (CAD), peripheral vascular disease, and cerebrovascular disease; diffuse systemic disease; diagnosis in one vascular territory (eg, previous myocardial infarction [MI]) suggests likelihood or presence of atherosclerosis in another vascular territory

Peripheral arterial disease (PAD): atherosclerotic disease that involves peripheral vessels; typically affects lower extremities, but can affect upper extremities and mesenteric vessels; many patients asymptomatic; common; often overlooked (important to identify; patients with PAD at higher risk for morbidity and mortality); in primary care practice, prevalence ≤30% in patients with high-risk features (eg, diabetes, smoking); overlap exists between diagnoses (eg, CAD and cerebrovascular disease); ≈63% of patients with PAD had polyvascular disease

PAD and increased mortality: patients with PAD (even asymptomatic patients) 6 times more likely to die of cardiovascular (CV) disease; more symptomatic patients at greater risk of dying of CV disease

Risk factors: diabetes (patients with diabetes 4 times more likely to develop symptomatic PAD, compared to general population); smoking; hypertension; dyslipidemia

Symptoms: 60% of patients with PAD report symptoms; 40% asymptomatic; 10% of symptomatic patients have symptoms of classic claudication (eg, calf pain with walking); most patients have atypical symptoms, eg, pain with walking and sitting, burning pain, sensation of heaviness (often difficult to obtain thorough patient history); study found that basing diagnosis on presence or absence of claudication would miss diagnosis of PAD in ≤90% of patients; questions to ask — “do you walk?”; “if you do not walk, why not?”; “do you have any pain in your legs?”; “how far can you walk without stopping?”; “what stops you when walking?”; “have you had any nonhealing wounds on extremities?”; physical activity — patients with PAD (particularly elderly patients) usually have subconscious decrease in activity level over time; assess level of physical activity; ask family members about history, activity level, and symptoms

Physical examination: pulses — some patients have occlusive disease with diminished pulses; some patients have adequate perfusion with absent pulse (due to calcification of arteries); palpable pulse implies temporary distention of artery; diminished pulse often suggestive of arterial calcification; patients may have pulse at rest that diminishes with exercise (eg, walking, calf raises); other — arterial bruits; hair loss in lower extremities; poor nail growth or brittle nails; dry, atrophic skin; dependent rubor (eg, foot appears bright red and pink when hanging down, but becomes pale white with elevation [classic finding in advanced PAD]); tissue ulceration or gangrene

Presentations of PAD: asymptomatic (patients may have functional impairment); 10% of patients have classic claudication; atypical symptoms; critical limb ischemia — severe PAD; minimal blood flow to limb; patients at immediate risk for limb loss; patients can have nonhealing wound or gangrene; acute limb ischemia — acute onset of pain; “palselessness,” pallor, paresthesias, and paralysis; medical emergency

Rutherford classification of PAD: stage 0 — asymptomatic PAD; stage 6 — gangrene and ulceration; stages 4, 5, and 6 — critical limb ischemia

Differential diagnosis: calf discomfort — venous occlusion; chronic compartment syndrome; nerve root compression (particularly in patients with spinal problems); Baker cyst behind knee; hip, thigh, or buttock discomfort — hip arthritis; spinal cord compression; foot problem — arthritis; Buerger disease (small vessel disease classically seen in active smokers)

Symptoms of vascular vs neurogenic claudication: vascular — cramping; tightness; aching; neurogenic — tingling; numbness; burning; shooting pain with standing for prolonged time; location of discomfort similar between vascular and neurogenic claudication; in neurogenic claudication, symptoms relieved by changing positions; hip, buttock, or thigh claudication common in iliac disease; thigh and calf claudication usually due to problem with superficial femoral artery; isolated foot or instep claudication can be due to tibial vessel disease

Ankle-brachial index (ABI): if no arterial blockage present, then blood pressure (BP) in brachial arteries should be same as BP in ankle; in patients with obstruction in peripheral vessels, BP in ankle lower than BP in arm; procedure — use Doppler ultrasonography and completely occlude brachial artery; slowly reduce cuff pressure until Doppler signal appears; perform on both arms and ankles at posterior and anterior tibial locations; discard lower value and use higher value; ratio of 1 normal; lower ratio suggests more pronounced obstruction; mortality — lowest in patients with normal ABI; worse in patients with low or very high ABI; ABI 95% sensitive and 100% specific for severe PAD; routine ABI screening not covered by insurance; normal ABI in patients with PAD — if resting ABI normal, but symptoms and history suggestive of PAD, then measure ABI after exercise (ABI drops after exercise); who

Educational Objectives

The goal of this program is to improve management of peripheral arterial disease (PAD) and deep venous thrombosis (DVT). After hearing and assimilating this program, the clinician will be better able to:

1. Recognize symptoms and presentations of PAD.
2. Prescribe appropriate therapies and risk factor modifications for patients with PAD.
3. Describe approaches to revascularization, such as endovascular therapy.
4. Review data about duration of anticoagulation therapy in DVT.
5. Assess ongoing risk for recurrence in patients with DVT.

Faculty Disclosure

In adherence to ACCME Standards for Commercial Support, Audio-Digest requires all faculty and members of the planning committee to disclose relevant financial relationships within the past 12 months that might create any personal conflicts of interest. Any identified conflicts were resolved to ensure that this educational activity promotes quality in health care and not a proprietary business or commercial interest. For this program, the following has been disclosed: Dr. Stinis is a consultant for Abbot Vascular, COOK Medical, and Medtronic, and is on the Speakers’ Bureau for Medtronic. Dr. Froehlich is a consultant for Boehringer Ingelheim GmbH, Janssen Pharmaceuticals, Merck & Co, and Pfizer. The planning committee reported nothing to disclose. In his lecture, Dr. Froehlich presents information that is related to the off-label or investigational use of a therapy, product, or device.
to test — patients <50 yr of age with risk factors (eg, diabetes, smoking, dyslipidemia, hypertension); patients 50 to 69 yr of age with history of smoking or diabetes; patients >70 yr of age; patients with symptoms suggestive of claudication; patients with abnormal pulse examination of lower extremity; patients with history of atherosclerosis in another territory; Medicare reimbursement — standard ABI part of physical examination; Doppler waveform analysis billable procedure

Natural history of PAD: asymptomatic PAD — most patients develop progressive functional impairment and claudication or progressively worsen; critical limb ischemia — associated with worst possible outcomes; 15% to 20% have claudication; if untreated, patients deteriorate and ultimately develop ischemic rest pain, ulceration, or gangrene; mortality low after amputation; only 25% to 30% of patients who receive prothetic limb can ambulate or have properly fitting prosthetic; amputation should be therapy of last resort

Treatment: address risk factors, lifestyle, and symptoms; goal to reduce symptoms and increase mobility and ability to exercise; medications (eg, cilostazol); consider interventional therapy (revascularization) for patients who do not respond to less aggressive approaches; control risk factors; smoking cessation shown to have most benefit; BP control; antiplatelet therapy (eg, aspirin, clopidogrel); diabetes control; exercise program; statin therapy

Medical therapy: aspirin; consider clopidogrel in patients allergic to aspirin or who have CAD with stent placement; cilostazol — can be helpful in patients with claudication; not useful for wound healing, gangrene, ulcerations, or critical limb ischemia; can exacerbate heart failure (HF); typically causes gastrointestinal side effects (start with low dose); to maximize effectiveness, use 100 mg twice daily (speaker starts with 50 mg twice daily; then after 2 wk, gives 100 mg twice daily), pentoxifylline (Pentoxil, Trenal) — multiple studies show effect minimal; not recommended; others — statins important; angiotensin-converting enzyme (ACE) inhibitors and β-blockers effective in CAD and equally effective in patients with PAD who can tolerate them; acceptable to use β-blockers in patients with claudication

PAD and diabetes: lower control of diabetes increases likelihood for admission for PAD-related complication

Under treatment of PAD: study found that out of 1733 patients with known PAD, only 33% on appropriate β-blocker therapy, 30% on ACE inhibitor, and 31% on statin; among those with diabetes, only 46% had hemoglobin A₁c <7%

Management of PAD: asymptomatic — modify risk factors; treat low-density lipoprotein to goal of <100 mg/dL; start appropriate medical therapy; carefully reassess symptoms at every visit; if symptoms worsen, refer to specialist; symptomatic — consider adding cilostazol and exercise program; consider referral to vascular specialist; when to refer to specialist — ulceration; gangrene; nonhealing wound; ischemic rest pain; claudication that interferes with lifestyle

Revascularization therapy: bypass surgery requires adequate conduit; in many patients, saphenous vein inadequate; synthetic conduit (eg, fabric or Teflon tube) can be used, but track record poor; adequate outflow and inflow needed; risk for mortality and morbidity high; assess risk based on preoperative guidelines; vascular surgery considered highest-risk surgical procedure; patients at high risk for MI, death, wound infection, chronic neuropathic pain, and/or swelling

Endovascular therapy: catheter-based approach to revascularization; typically performed under conscious sedation with midazolam (Versed), fentanyl, and lidocaine; risk low (<1%); success rate high (>90%); often performed as outpatient procedure; can involve balloon angioplasty or stent placement; drug-eluting peripheral stent approved by Food and Drug Administration, and designed to treat superficial femoral artery and popliteal artery (data suggest potency of 83%-84% at 18 mo to 3 yr); important to maximize blood flow from aorta to wound (collateral inadequate); goal to avoid amputation and return to baseline

Bypass vs Angioplasty in Severe Ischaemia of the Leg (BASIL) trial: took place from 1999 to 2004 and involved patients from 27 hospitals in United Kingdom; patients with critical limb ischemia randomized to surgery first or angioplasty first; at 30 days, no significant difference in mortality, but patients who had surgery first had higher rate of early morbidity (eg, wound infections, pain and suffering, rehospitalizations); complications include HF and MI; endovascular therapy arm less expensive; endovascular treatment recommended

Deep Venous Thrombosis/Pulmonary Embolism

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Duration of anticoagulation therapy for deep venous thrombosis (DVT) — studies — 1) compared 3 mo to 6 mo of therapy; concluded no difference; guidelines recommend 3 mo of therapy; 2) compared 6 mo to 6 wk of therapy; saw recurrences once anticoagulation therapy stopped; study did not differentiate between patients with provoked DVT and idiopathic DVT (recurrence rates higher in patients with idiopathic DVT); study shows that 6 mo of therapy better than 6 wk, but neither duration effective in preventing recurrent DVT; 3) compared 3 mo to 12 mo of therapy; concluded that 12 mo of therapy better, but rate of recurrence similar once therapy stopped; 4) compared 3 mo to 24 mo of therapy; warfarin (Coumadin, Jantoven) better than no treatment, but duration of therapy needed unclear; 24 mo better than no therapy, but management beyond 24 mo unclear; 5) found lower-intensity treatment improved outcomes (compared to placebo), but did not prevent recurrences; aspirin — study randomized patients with idiopathic DVT who completed course of anticoagulant therapy to aspirin or no therapy, and found that aspirin reduced recurrence rate by 50%

Guidelines: treat patients with DVT or pulmonary embolism for 3 mo, then decide whether therapy should be extended (as in, eg, patients with unprovoked DVT and not at increased risk of bleeding); if patient has unprovoked DVT and high risk of bleeding, then further therapy may not be needed; reassess risk of bleeding and risk for recurrence

Assessing ongoing risk for recurrence: idiopathic DVT — risk for recurrence 5% to 10% per year over first 5 yr, cumulative recurrence risk 30% to 40%; isolated distal DVT — reasonable to watch patients; address cause of DVT; perform complete imaging studies and follow-up surveillance imaging studies; once-daily low-molecular-weight heparin (LMWH) recommended over twice-daily LMWH (grade IIC recommendation driven by pharmacokinetics and cost data); active cancer — LMWH appears superior to warfarin in patients with active cancer; LMWH recommended for 3 to 6 mo over warfarin; superficial venous thrombosis — controversial; randomized data suggest that if superficial clot significant (ie, over long segment of superficial vein), then patients seem to do better with prophylactic doses of fondaparinux or LMWH for 45 days, compared to no treatment (reasonable option along with current standard of care of conservative management); compression stockings useful in preventing symptoms; D-dimer testing — useful; perform 1 mo after anticoagulation therapy complete; elevated D-dimer associated with significantly increased risk; study found continued treatment in patients with positive D-dimer highly effective; conclusion — in addition to assessment of ongoing risk of clotting and bleeding, important to gauge patient’s interest in ongoing anticoagulation therapy; useful for determining which patients with idiopathic DVT at lower risk for recurrence

Study on dabigatran vs warfarin: patients with DVT who received LMWH randomized to warfarin or dabigatran; risk for recurrence virtually identical between groups; found dabigatran as effective as warfarin, but better in terms of risk of bleeding (risk for any bleeding reduced by 30%; no difference in major bleeding)
Suggested Reading


Acknowledgments

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1. 40% of patients with peripheral arterial disease (PAD) have which of the following symptoms?
   (A) Calf pain with walking  (C) Burning and tingling
   (B) Calf pain with sitting  (D) No symptoms

2. Likely findings on physical examination of a patient with PAD include:
   (A) Diminished pulses  (C) Brittle nails
   (B) Arterial bruits  (D) All the above

3. Compared to vascular claudication, patients with neurogenic claudication:
   (A) Report cramping and aching pain
   (B) Can relieve discomfort by changing positions
   (C) Have more pain in the hip, thigh, or buttock
   (D) Are more likely to have tibial vessel disease

4. Ankle-brachial index should be measured in patients ______, regardless of risk factors or clinical findings.
   (A) >40 yr of age  (C) >60 yr of age
   (B) >50 yr of age  (D) >70 yr of age

5. Cilostazol is helpful for patients with PAD and which of the following?
   (A) Claudication  (C) Gangrene
   (B) Ulceration  (D) Critical limb ischemia

6. Which of the following is least recommended in the treatment of PAD?
   (A) Atorvastatin  (B) Lisinopril  (C) Pentoxifylline  (D) Metoprolol

7. Choose the correct statement about endovascular therapy for PAD.
   (A) Typically performed under general anesthesia
   (B) Success rate is ~50%
   (C) Considered high-risk inpatient procedure
   (D) Goals are to avoid amputation and return to baseline

8. Recurrence rates are higher in patients with:
   (A) Idiopathic deep venous thrombosis (DVT)  (B) Provoked DVT

9. According to guidelines, patients with DVT or pulmonary embolism should be treated for ______ before deciding whether therapy should be extended.
   (A) 6 wk  (B) 1 mo  (C) 3 mo  (D) 6 mo

10. Which of the following statements about dabigatran is true?
    (A) Associated with more intracranial hemorrhage than warfarin
    (B) Affects partial thromboplastin time, thrombin time, and ecarin clotting time
    (C) Reversed by prothrombin complex concentrate
    (D) All the above

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