



UCVA

is pleased to welcome

Barbara Kircher, MD, FACC
to the practice.

Dr. Kircher is a Board Certified Cardiologist and is accepting new patients in our Greece & Brighton offices. To schedule an appointment please call UCVA at **(585) 442-5320**.

A Closer Look at Peripheral Artery Disease

By David R. Fries, MD, FACC

Peripheral arterial disease (PAD) is most commonly caused by atherosclerosis, which results in impaired blood flow to the upper or lower extremity. PAD is highly associated with systemic atherosclerosis in the coronary and cerebral circulation, which would explain why patients with PAD have a high risk of cardiovascular events including MI, stroke, and vascular death. Traditionally, cardiologists have devoted most of their efforts to the diagnosis and treatment of arterial disease in the coronary tree. While diseases of the aorta have often been accorded a place in cardiology training and practice, focus on disease of the peripheral arteries has lagged. More recently, however, practitioners of cardiology have demonstrated increasing interest in PAD. This article serves to

provide a framework for the approach to the diagnosis and management of patients with PAD.

The prevalence of PAD is greater than that of CHF or stroke (and comparable to the prevalence of MI), affecting approximately 8-12 million Americans. Using the ankle-brachial index (ABI), PAD is detected in less than 3% of those younger than 60, but in more than 20% those 75 years and older and is 27% more prevalent in men than in women. The risk of major CV events (i.e. MI, stroke, vascular death) for established PAD is estimated to be 5% per year. Patients with critical limb ischemia (CLI) and the lowest ABI have an annual mortality of 25%. The mortality rate among patients with PAD is 5-6% per year. Cardiovascular events account for 75% of all

mortality among patients with PAD.

Diagnosis

The two cardinal symptoms of PAD are intermittent claudication and pain at rest. Intermittent claudication (IC), the most common symptom of PAD may manifest as pain, aching, or fatigue in working skeletal muscles, and is relieved by rest. IC occurs when skeletal muscle oxygen demand during effort exceeds the blood supply. The symptomatic manifestations of PAD can range from none in patients who are inactive, to IC, to critical leg ischemia with ischemic rest pain and ultimately ulceration of the foot. A hallmark of all patients with PAD, however, is reduced function and exercise capacity. The physical examination is an

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S. Najeeb Ahmad, MBBS, RVT, Technical Director of UCVA's Non-Invasive Vascular Lab performing a lower extremity ultrasound.

important component of the diagnostic strategy in PAD. A careful vascular examination includes palpation of pulses and auscultation of accessible arteries for bruits. Pulses that are readily palpable in healthy individuals include the brachial, radial, and ulnar arteries of the upper extremity and the femoral, popliteal, dorsalis pedis, and posterior tibial pulses in the lower extremities. A reduced or absent femoral pulse indicates occlusive disease of the inflow arteries (aorta or iliac), whereas absent pedal pulses are indicative of disease at any location. A stethoscope should also be used to auscultate the supraclavicular and infraclavicular fossae for evidence of subclavian artery stenosis; the abdomen, flank, and pelvis for evidence of stenosis in the aorta and its branch vessels.

The legs and feet should be thoroughly examined, not only for the finding of tissue loss or ulceration, but also for the presence of pallor on elevation and rubor with dependency.

In patients with symptoms or physical findings suggestive of PAD, or in patients at high risk for PAD, the ABI is the ideal office based objective evaluation. A normal ABI is defined as a resting measurement greater than 0.90. A value less than or equal to 0.90 signifies hypoperfusion and the presence of PAD. The lower the ABI, the more severe the PAD. ABI values between 0.40 and 0.70 usually represent patients with mild to moderate PAD. Values less than 0.40 suggest the most advanced stages of PAD, with ischemic rest pain, non-healing ulcerations, and gangrene

occurring with increasing frequency.

Management

The goals of therapy for patients with PAD are to:

1. Prevent systemic atherosclerotic disease progression
2. Prevent clinical CV events
3. Prevent limb loss
4. Improve functional status of patients with IC

The well known modifiable risk factors associated with coronary atherosclerosis also contribute to atherosclerosis of the peripheral circulation. Cigarette smoking, diabetes mellitus, dyslipidemia, hypertension, and hyperhomocysteinemia increase the risk of PAD. Patients with PAD should be

approached with the same intensity for secondary CVD prevention and risk factor modification as recommended for patients with CAD (carotid artery disease). According to established guidelines, all patients diagnosed with PAD must receive aggressive therapy to prevent subsequent atherosclerotic disease and clinical events.

Secondary prevention strategies include:

1. Complete tobacco cessation
 - a. All patients should be strongly advised to stop smoking by their physicians
 - b. All patients should be offered nicotine replacement and group counseling sessions
 - c. Many patients may benefit from the addition of antidepressant drug therapy
2. Glycemic control in patient with diabetes mellitus, with a HgbA1c goal of less than 7.0%.
3. Reduction of LDL cholesterol to less than 100 mg/dL and in higher risk patients less than 70 mg/dL
4. Medical therapy for hypertension, with blood pressure targets of less than 140/90 mmHg in most patients, and less than 130/80 mmHg in those patients with PAD who also have diabetes or renal disease.
 - a. In the past, there has been concern in the use of beta-blockers in the treatment of hypertension among patients with IC, but there appear to be no adverse effects of beta-1 selective blockers on claudication symptoms.
 - b. Multiple trials have demonstrated the benefits of the use of an ACE inhibitor in hypertensive patients with PAD, particularly in the presence of concomitant coronary artery disease.
5. Antiplatelet agents are warranted in all patients with claudication to reduce the risk of myocardial infarction, stroke, and cardiovascular mortality. Aspirin (75 to 162 mg/day) should be given indefinitely, particularly in patients with clinically evident coronary or cerebral vascular disease. Aspirin may be considered in patients without symptoms.

Clopidogrel (75mg/day) is an alternative agent, but aspirin is preferred because the much higher cost of Clopidogrel is generally not justified by the possible small increase in efficacy shown in the CAPRIE trial.

Regular aerobic exercise reduces overall cardiovascular risk by modifying some risk factors, and produces symptomatic improvement in patients with PAD. The beneficial effects of exercise may be explained by several mechanisms, including improvement in endothelial vasodilator function, skeletal muscle metabolism, blood viscosity, and decreased inflammatory responses. Exercise training also improves oxygen extraction and walking efficiency by decreasing oxygen consumption for the same workload. Cilostazol, a phosphodiesterase III inhibitor, is currently approved for the treatment of mild to moderate IC. In addition to its antiplatelet properties, Cilostazol promotes vasodilation, increases plasma HDL cholesterol levels, decreases plasma

triglycerides, and potentially inhibits smooth muscle cell accumulation after PCI. Cilostazol (100mg orally twice daily) is recommended, in the absence of heart failure, to improve symptoms and increase walking distance in patients with lifestyle-limiting claudication, particularly if the above measures are ineffective and revascularization cannot be offered or is declined by the patient. Cilostazol is not recommended for routine use in all patients with claudication because of cost and modest clinical benefit. Surgical revascularization is generally indicated to improve the quality of life in patients with disabling claudication who are receiving maximal medical therapy and to relieve rest pain and preserve limb viability in

patients with critical limb ischemia. Endovascular therapies have now become a primary treatment option in those patients with symptomatic PAD. Vascular surgical procedures are classically reserved for patients with critical limb ischemia.

As the prevalence of PAD in patients continues to rise, it is important that providers know the clinical signs and symptoms, diagnostic tools, and treatment options available. We hope that this article provides a concise overview that you will find useful in your clinical practice. UCVA physicians will continue to be available to assist you with the management of these, as well as other cardiovascular issues. ■

~ Keep an eye out for our April issue and feel free to submit suggestions to Nicolé Fogarty.