Screening for Peripheral Arterial Disease: Recommendation Statement

U.S. Preventive Services Task Force

Summary of Recommendation

The USPSTF recommends against routine screening for peripheral arterial disease. **D recommendation**.

The USPSTF found fair evidence that screening with ankle brachial index can detect adults with asymptomatic PAD. The evidence is also fair that screening for PAD among asymptomatic adults in the general population would have few or no benefits because the prevalence of PAD in this group is low and because there is little evidence that treatment of PAD at this asymptomatic stage of disease, beyond treatment based on standard cardiovascular risk assessment, improves health outcomes.

The USPSTF found fair evidence that screening asymptomatic adults with the ankle brachial index could lead to some small degree of harm, including false-positive results and unnecessary work-ups. Thus, the USPSTF concludes that, for asymptomatic adults, harms of routine screening for PAD exceed benefits.

Clinical Considerations

- The ankle brachial index, a ratio of Doppler-recorded systolic pressures in the lower and upper extremities, is a simple and accurate noninvasive test for the screening and diagnosis of PAD. The ankle brachial index has demonstrated better accuracy than other methods of screening, including history-taking, questionnaires, and palpation of peripheral pulses. An ankle-brachial index value of less than 0.90 (95% sensitive and specific for angiographic PAD) is strongly associated with limitations in lower extremity functioning and physical activity tolerance.

- Smoking cessation and lipid-lowering agents improve claudication symptoms and lower extremity functioning among patients with symptomatic PAD. Smoking cessation and physical activity training also increase maximal walking distance among men with early PAD. Counseling for smoking cessation, however, should be offered to all patients who smoke, regardless of the presence of PAD. Similarly, physically inactive patients should be counseled to increase their physical activity, regardless of the presence of PAD.

Discussion

PAD refers to atherosclerotic occlusive disease of the arterial system distal to the aortic bifurcation, and is a relatively common disorder in the elderly.[1] The American Heart Association estimates that as many as 8 to 12 million Americans have PAD and that nearly 75% of them are asymptomatic.[2] An estimated 1 million Americans develop symptomatic PAD every year. Specifically, the prevalence of lower-extremity PAD based on ankle brachial blood pressure ratios is approximately 10% to 20% of community-dwelling individuals aged 65 and older and 18% to 29% of patients aged 50 and older in general medical practices.[3-5] The disease spectrum ranges from mild, intermittent claudication resulting in calf pain to severe, chronic leg ischemia requiring arterial bypass or amputation. Risk factors associated with PAD include older age, cigarette smoking, diabetes mellitus, hypercholesterolemia, hypertension, and (possibly) genetic factors.[1] There are no significant gender differences in the overall prevalence of PAD in the general population. Over a 5-year period, 25% to 35% of persons with PAD will suffer a myocardial infarction or stroke and an additional 25% will die, usually from cardiovascular causes.[6-8]

Screening may be conducted by such instruments as history-taking, questionnaires, or the ankle brachial index. Results from 1 study found that the sensitivity and positive predictive value of a classic history of claudication were only 54% and 9%, respectively, when using the ankle brachial index as the gold standard.[9] The Edinburgh Claudication Questionnaire (ECQ), which is a modification of the World Health Organization/Rose Questionnaire, has been validated in a study of approximately 300 patients older than 55 who saw their physician for any complaint. When compared with the independent assessment of 2 blinded clinicians, the ECQ showed a sensitivity of 91% and a specificity of 99% for the diagnosis of intermittent claudication.[10] Ankle brachial index has demonstrated better accuracy than the combination of history-taking and physical examination. The sensitivity of an abnormal posterior pulse was 71%, the positive predictive value was 48%, and the specificity was 91%. An abnormal dorsalis pedis had a sensitivity of only 50%; this artery is congenitally absent in 10% to 15% of the population.[11] Both the sensitivity and specificity of ankle brachial index less than 0.9 (the accepted cut-off for the presence of PAD) is about 95% for detecting angiographic arterial disease.[12] The accuracy of this screening tool increases as lower extremity stenotic lesions worsen.

One randomized clinical trial (RCT) of treatment of men with early PAD detected by screening investigated the impact of population-based screening.[13] The control group received usual care and the intervention group received “stop smoking and keep walking” advice. The study found improved ambulation in the intervention group; however, the study did not address the impact of interventions on PAD or cardiovascular disease events. In another RCT of primary prevention of intermittent claudication, a subgroup analysis of 26,289 male smokers aged 50 to 69, who had no history or symptoms of intermittent claudication, there was no benefit of using vitamin E, beta-carotene, or both, to prevent intermittent claudication.[14]

Potential harms of screening include false-positive results, labeling, and the adverse events associated with an angiographic workup, including contrast-related events, arterial perforations, hematomas, thromboses, and distal embolizations; the harms of treatment include the adverse

events associated with medical (antithrombotic medications) and surgical treatments (angioplasty, femoral bypass procedures).

Recommendations of Other Groups

The American Diabetes Association currently recommends annual screening for PAD in people with diabetes that includes a history of claudication and palpation of pedal pulses.[15] The American Academy of Family Physicians recommends against the use of Doppler or duplex ultrasound or other vascular laboratory tests in asymptomatic persons for PAD.[16] A few organizations, such as the American Heart Association and the Society of Interventional Radiology, support the use of the ankle brachial index in the evaluation of suspected PAD. For further information, please refer to the following Web sites:

- American Heart Association, http://www.americanheart.org.
- American College of Surgeons, http://www.facs.org/index.html.
- Society of Interventional Radiology, http://www.sirweb.org/.

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This statement summarizes the U.S. Preventive Services Task Force (USPSTF) recommendations on screening for peripheral arterial disease and the supporting scientific evidence, and updates the 1996 recommendations contained in the *Guide to Clinical Preventive Services,* second edition.[1] Explanations of the ratings and of the strength of overall evidence are given in Appendix A and Appendix B, respectively. The complete information on which this statement is based, including evidence tables and references, is included in the brief evidence update[17] on this topic, available on the USPSTF Web site (www.preventiveservices.ahrq.gov). The recommendation is also posted on the Web site of the National Guideline Clearinghouse™ (www.guideline.gov).

Recommendations made by the USPSTF are independent of the U.S. Government. They should not be construed as an official position of AHRQ or the U.S. Department of Health and Human Services.

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www.preventiveservices.ahrq.gov.

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APPENDIX A

U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATIONS AND RATINGS

The Task Force grades its recommendations according to one of 5 classifications (A, B, C, D, I) reflecting the strength of evidence and magnitude of net benefit (benefits minus harms):

A. The USPSTF strongly recommends that clinicians provide [the service] to eligible patients. *The USPSTF found good evidence that [the service] improves important health outcomes and concludes that benefits substantially outweigh harms.*

B. The USPSTF recommends that clinicians provide [the service] to eligible patients. *The USPSTF found at least fair evidence that [the service] improves important health outcomes and concludes that benefits outweigh harms.*

C. The USPSTF makes no recommendation for or against routine provision of [the service]. *The USPSTF found at least fair evidence that [the service] can improve health outcomes but concludes that the balance of benefits and harms is too close to justify a general recommendation.*

D. The USPSTF recommends against routinely providing [the service] to asymptomatic patients. *The USPSTF found at least fair evidence that [the service] is ineffective or that harms outweigh benefits.*

I. The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]. *Evidence that [the service] is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.*

APPENDIX B

U.S. PREVENTIVE SERVICES TASK FORCE STRENGTH OF OVERALL EVIDENCE

The USPSTF grades the quality of the overall evidence for a service on a 3-point scale (good, fair, poor):

Good: Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair: Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.

Poor: Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

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