

Determinants of invasive treatment in lower extremity peripheral arterial disease

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Objective: Since it is unknown what factors are weighed in a clinician's decision to refer patients with symptomatic lower extremity peripheral arterial disease (PAD) for invasive treatment, we examined the relationship between health status, lesion location, and site variations and invasive treatment referral ≤ 1 year following diagnosis in patients with PAD.

Methods: This was a prospective observational cohort study on ambulatory patients that presented themselves at two vascular surgery outpatient clinics. A total of 970 patients with new symptoms of PAD or with an exacerbation of existing PAD symptoms that required clinical evaluation and treatment (Rutherford Grade I) were eligible, 884 consented and were included between March 2006 and November 2010. We report on 505 patients in the current study. Prior to patients' initial PAD evaluation, the Short Form-12, Physical Component Scale (PCS) was administered to measure health status. Anatomical lesion location (proximal vs distal) was derived from duplex ultrasounds. PCS scores, lesion location, and site were evaluated as determinants of receiving invasive (endovascular, surgery) vs noninvasive treatment ≤ 1 year following diagnosis in Poisson regression analyses, adjusting for demographics, ankle-brachial index, and risk factors.

Results: Invasive treatment as a first-choice was offered to 167 (33%) patients. While an association between poorer health status and invasive therapy was found in unadjusted analyses (relative risk [RR], 0.98; 95% confidence interval [CI], 0.97-1.00; $P = .011$), proximal lesion location (RR, 3.66; 95% CI, 2.70-4.96; $P < .0001$) and site (RR, 1.69; 95% CI, 1.11-2.58; $P = .014$) were independent predictors of invasive treatment referral in the final model.

Conclusions: One-third of patients were treated invasively following PAD diagnosis. Patients' health status was considered in providers' decision to refer patients for invasive treatment, but having a proximal lesion was the strongest predictor. This study also found some important first indications of site variations in offering invasive treatment among patients with PAD. Future work is needed to further document these variations in care. (*J Vasc Surg* 2014;59:400-8.)

Treatment for symptomatic peripheral arterial disease (PAD) in the lower extremities is targeted at symptom relief and cardiovascular risk management.¹ While a myriad

of treatments are available for PAD, consisting of strategies such as supervised exercise therapy, optimal pharmacological management, and widely adopted invasive options like percutaneous transluminal angioplasty (PTA),²⁻⁴ current treatment guidelines explicitly state to preferentially treat patients with Rutherford (Grade I) non-invasively and promote supervised exercise therapy.⁵⁻⁷

Current guidelines additionally mention, however, that patients' health status and the anatomic lesion location they present with are important considerations to take into account in the clinical decision-making process to refer patients with PAD for invasive treatment.⁵⁻⁷ In the field of PAD, however, there are virtually no studies available that examined to what degree these aspects are actually being weighed in the decision to refer patients for invasive treatment in PAD specialty care and to what degree the threshold for this decision differs across institutions. In addition, it remains unclear whether patients in whom we expect the highest benefit – those with the highest disease burden – are more likely to receive invasive therapy,⁴ as compared with those who are experiencing a minimal disease burden.

To address these gaps in knowledge, this study aimed to evaluate whether patients' physical health status, the anatomic lesion location for which they seek treatment, as well as the hospital to which patients present, are indeed important factors in the referral of patients for invasive treatment for their PAD symptoms. We examined these

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Part of these data (abstract) were presented at the Quality of Care and Outcome Research (QCOR) in Cardiovascular Disease and Stroke Scientific Sessions of the American Heart Association, Washington, D.C., May 12-14, 2011.

Additional material for this article may be found online at www.jvascsurg.org. Reprint requests: Kim G. Smolderen, PhD, Assistant Professor, Department of Medical Psychology, Tilburg University, PO Box 90153, Room P610, 5000 LE Tilburg, The Netherlands (e-mail: k.g.e.smolderen@gmail.com).

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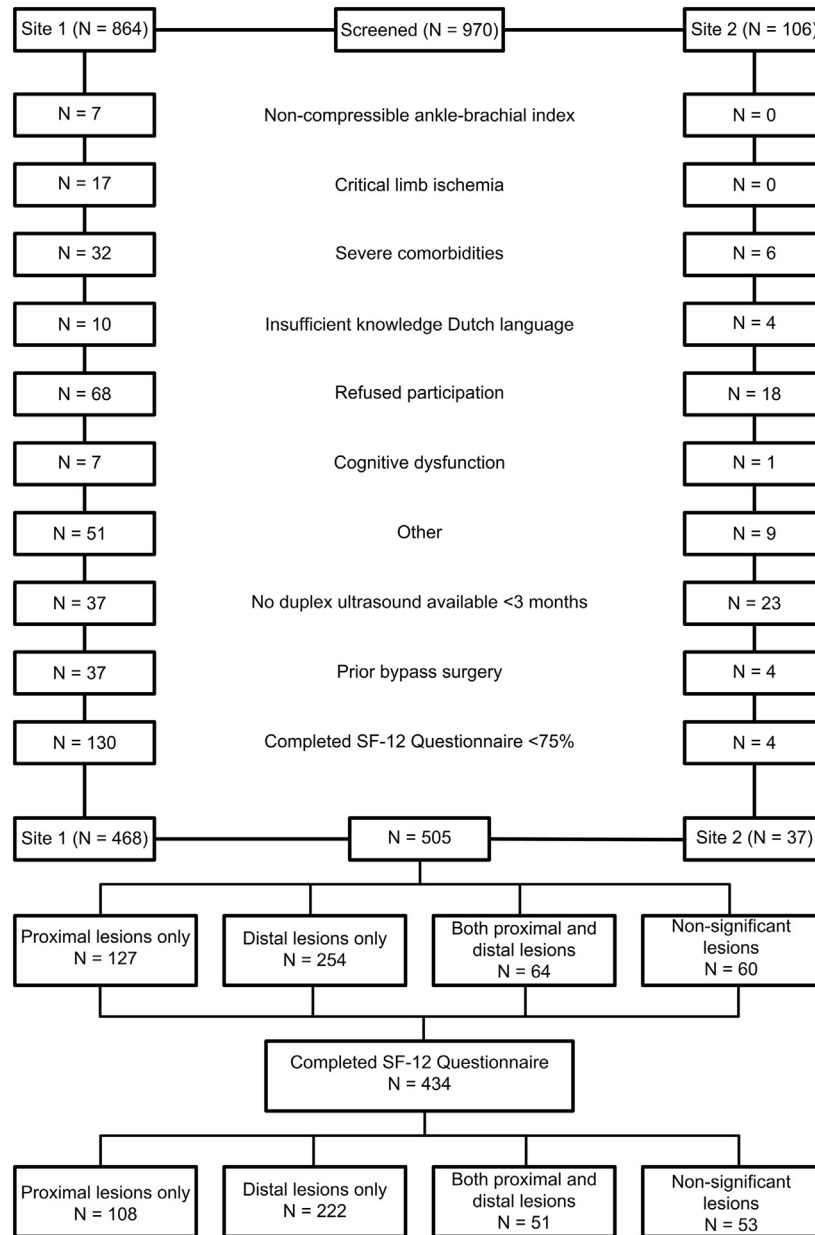


Fig 1. Overview of the study population. SF-12, Short Form 12.

associations in a cohort of patients with Rutherford Grade I, who were evaluated for newly diagnosed PAD or for an exacerbation of existing symptoms of PAD in vascular specialty clinics. Ideally, we expect that patients who present with favorable risk-benefit lesions (proximal lesions) or patients who have a lower physical health status will be more likely to be referred for invasive treatment as compared with those having more unfavorable risk-benefit lesions (distal lesions) or a better health status.^{2,6,8,9} Addressing these questions seems to be particularly useful in an era where appropriateness criteria for invasive procedures in PAD are still lacking, and the use of costly

endovascular procedures continue to rise against a background of tightening budgets for health care.^{10,11}

METHODS

Patients and study design

A total of 1190 patients were screened, 970 were eligible, 884 consented, and 505 PAD patients were included (Fig 1 includes an overview of exclusion reasons). They were consecutively enrolled within an ongoing prospective observational study for patients who presented themselves at two vascular surgery outpatient clinics

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