M.G. Davies, M.D., Ph.D., M.B.A.

CRITICAL LIMB ISCHEMIA: INTRODUCTION

Mark G. Davies, M.D., Ph.D., M.B.A.

Methodist DeBakey Heart & Vascular Center, The Methodist Hospital, Houston, Texas

Chronic critical ischemia reflects significant atherosclerotic disease of the lower-extremity vessels and is associated with a loss of quality of life, significant lifestyle-limiting symptoms, potential major limb loss, and death due to cardiovascular disease. Patients with chronic critical limb ischemia require a multidisciplinary, multimodality approach targeting their atherosclerotic risk factors of cigarette smoking, hyperlipidemia, and diabetes. Active antiplatelet therapy is required to mitigate their thromboembolic risk. Regular exercise is also a necessary requirement in any therapeutic intervention. Asymptomatic patients need their risk factors monitored and interventions refined over a lifetime. Patients with claudication symptoms (i.e., pain on walking) benefit from modifying their risk factors, and those with iliac disease may or may not benefit from endoluminal intervention. Femoropopliteal and tibial interventions should be reserved for compliant patients who have failed a multimodality intervention. Economic pressures have, however, pushed intervention to the first line without sufficient and compelling data to document a long-term benefit in quality of life or a rational cost effectiveness.

Patients with the critical limb ischemia sequelae of rest pain and tissue loss represent an urgent to emergent care matter. These patients require immediate and aggressive modification of their risk factors and endoluminal or open intervention to restore satisfactory circulation to the endangered limb. Currently 80% of patients with tissue loss may not receive a vascular opinion or studies prior to major amputation. The goal of any intervention is to restore inflow (aortoiliac segment) of the lower extremity vasculature and to intervene on one additional level in the femoropopliteal or tibial areas. Rest pain is often markedly ameliorated with effective therapy of one level of disease. Tissue loss, however, is a different matter. Active wounds and minor amputation sites require at least a two-fold increase in blood flow to the foot to effect healing. The clinical imperative to ensure in-line flow to the foot is the result of this fact. Defining the affected angiosome in the foot is also paramount to an effective intervention. Defining the perfusion and the angiosome is best accomplished with noninvasive studies and noninvasive measures of perfusion. Angiography, whether by conventional computed tomography (CT) or magnetic resonance (MR), defines the anatomy, the runoff, and the potential interventions.

The opinion championing the use of endovascular intervention first versus a global bypass strategy is erroneous. The cardiovascular risk profile of the patient, the patient's true preoperative mobility, and the potential for success must be accurately weighed before any intervention is planned. Some patients will do better with a well-planned amputation rather than a failed intervention that leads to systemic or limb compromise. The patient needs the one definitive and successful procedure to ensure success, avoidance of major amputation, loss of conditioning, and mitigation of cardiovascular stress. Access to rehabilitation, advanced wound care, and prosthetic services is paramount for patients with tissue loss.

Due to the recognized need for effective and rapid response to lower-extremity critical limb ischemia, emerging limb salvage programs are offering a multidisciplinary, multimodality approach for treating these patients. The primary goal of these programs is appropriate and rational interventions in the affected limb coupled with remediation of the patient's cardiovascular risk. This issue of the *Methodist DeBakey Cardiovascular Journal* outlines the current approaches to caring for the patient needing limb salvage, including systemic risk factor modification, advanced endoluminal and open intervention, advanced wound care, care of special at-risk groups, and the new frontier of gene and cell therapy to allow for distal vascular recovery in patients with no other treatment options. Look for a follow-up issue on this topic to appear next spring.

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