

Original Article

Percutaneous transluminal angioplasty is feasible and effective in patients on chronic dialysis with severe peripheral artery disease

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Abstract

Background. Peripheral arterial disease (PAD) is common among patients on chronic dialysis. Despite severe clinical manifestations, the indication for bypass surgery is controversial, because of the high morbidity and mortality rate of these patients. The less invasive percutaneous transluminal angioplasty (PTA) is a possible alternative, but data about PTA in dialysis patients are scarce.

Methods. We followed 107 dialysis patients (mean age 67 ± 10, 75 males) with 132 ischaemic limbs (97% with critical limb ischaemia and ischaemic foot lesions or rest pain) consecutively treated by PTA.

Results. PTA was successful in 97% of cases. Median follow-up was 22 months. Cumulative limb salvage rates at 12, 24, 36 and 48 months were 86, 84, 84 and 62%, respectively. Log-rank test showed an association between major amputation and baseline presence of foot lesions (P = 0.04). This association was confirmed by a Cox survival multivariate analysis [hazard ratio (HR) = 7.03, 95% confidence interval (CI) = 1.1–43.0, P = 0.035]. Limb salvage without any new intervention on the same leg was achieved in 70% of the cases, and was associated with the absence of diabetes mellitus (P = 0.01), lower number of treated lesions (P = 0.04) and proximal level (iliac and/or femoro-popliteal) of PTA (P < 0.001). Independent predictors were diabetes mellitus (HR = 3.47, 95% CI = 1.31–9.17, P = 0.01) and proximal PTA (HR = 0.28, 95% CI = 0.08–0.94, P = 0.04). Fifty-three (49%) patients died during follow-up. Patients older than 67 years (the median value in our sample) had a 2.4-fold increase in mortality risk (95% CI = 1.4–4.1, P < 0.001).

Conclusions. PTA is feasible and effective in dialysis patients with PAD, and should be preferred to other more invasive interventions.

Keywords: critical limb ischaemia; dialysis; end-stage renal disease; percutaneous transluminal angioplasty; peripheral artery disease

Introduction

End-stage renal disease (ESRD) and chronic dialysis are associated with a higher prevalence of lower limb peripheral artery disease (PAD) [1]. Since life expectancy, which is limited among ESRD subjects [2], is further decreased in PAD patients on chronic dialysis [3], the treatment of peripheral vascular complications in such patients is controversial [4]. Furthermore, in dialysis subjects, PAD is accompanied by diffuse vascular calcifications [5] and involvement of distal infrapopliteal and foot arteries [6].

With respect to clinical manifestations, as compared with PAD non-dialysis patients, PAD patients on chronic dialysis have an increased risk of critical limb ischaemia (CLI) and limb loss [7]. It has been shown that complications from CLI are among the main causes of death in dialysis patients [8] and survival is reduced after major amputation [9]. Therefore, theoretically the possibility of restoring appropriate blood flow to the foot should always be evaluated.

Bypass surgery in ESRD patients may be difficult to perform because of the hard calcifications of distal vessels. A poor limb salvage rate after surgical revascularization has been reported, with associated high perioperative mortality [10–12].

Percutaneous transluminal angioplasty (PTA) represents a valid alternative to bypass surgery in most patients with PAD of lower limbs, showing a better safety profile and good clinical efficacy [13,14].

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