

Reduced patency rate after revascularization for peripheral arterial occlusive disease in patients with chronic kidney disease

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OBJECTIVES

Peripheral arterial occlusive disease (PAOD) is more prevalent among patients with chronic kidney disease (CKD) than in general population. Recent data indicate favorable results after revascularization for PAOD, however it is unclear whether it would be also significantly effective to CKD patients. This study aimed to evaluate the potential outcomes of revascularization for PAOD in CKD patients.

METHODS

We retrospectively evaluated 121 patients who underwent revascularization for PAOD between 2008 and 2012. Patients were categorized into two groups: CKD group (eGFR < 60ml/min/1.73 m²) and control group (eGFR ≥ 60ml/min/1.73 m²). Preoperative and postoperative assessments of stenosis were quantified by CT angiography (CTA). Postoperative loss of patency was defined as an occlusion or >50% stenosis. Also, hemodynamic parameters (decrease in ankle-brachial index of >0.2, or loss of palpable pulse) or clinical parameters (recurrence of claudication, failure of wound healing or need for amputation of critical limb ischemia) were used as surrogates for patency assessment.

Table 1 Baseline characteristics

	Mean±SE or n (%)	Loss of patency	
		Univariate analysis (p value)	Cox regression: p value, HR (95% CI)
Age (years)	67.1±9.1	0.554	
Male	101 (83.5)	0.693	
Body mass index	23.6±4.2	0.565	
Tobacco use	48 (39.7)	0.897	
Diabetes mellitus	62 (51.2)	0.870	
Hypertension	75 (62.0)	0.358	
Coronary artery disease	30 (24.8)	0.356	
Cerebrovascular disease	21 (17.4)	0.808	
Antiplatelet drug	65 (53.7)	0.623	
Critical limb ischemia	39 (32.2)	0.039	0.008 (1.29, 5.45)
Crestinine	1.73±2.0	0.022	
eGFR (ml/min/1.73 m ²)	70.0±39.4	0.043	
eGFR<60 (ml/min/1.73 m ²)	54 (44.6)	0.018	0.041 (1.03, 4.50)
CKD class		0.031	
CKD 3	36 (29.8)		
CKD 4	8 (6.6)		
CKD 5	10 (8.3)		
Hemoglobin	13.0±4.0	0.166	
Albumin	4.00±0.50	0.688	
Serum calcium	9.16±0.73	0.215	
Serum phosphorus	3.67±0.80	0.078	
CRP	1.54±3.59	0.583	
Cholesterol	163.2±51.2	0.895	
Preoperative CT angiography score	3.43±0.88	0.599	
Target level		0.555	
Aortoiliac	36 (29.8)		
Femoropopliteal	65 (53.7)		
Infrapopliteal	18 (14.9)		
Type of revascularization		0.876	
Endovascular	77 (63.6)		
Surgical	44 (36.4)		

Fig 1. Patency rate in patients with CKD and non-CKD patients

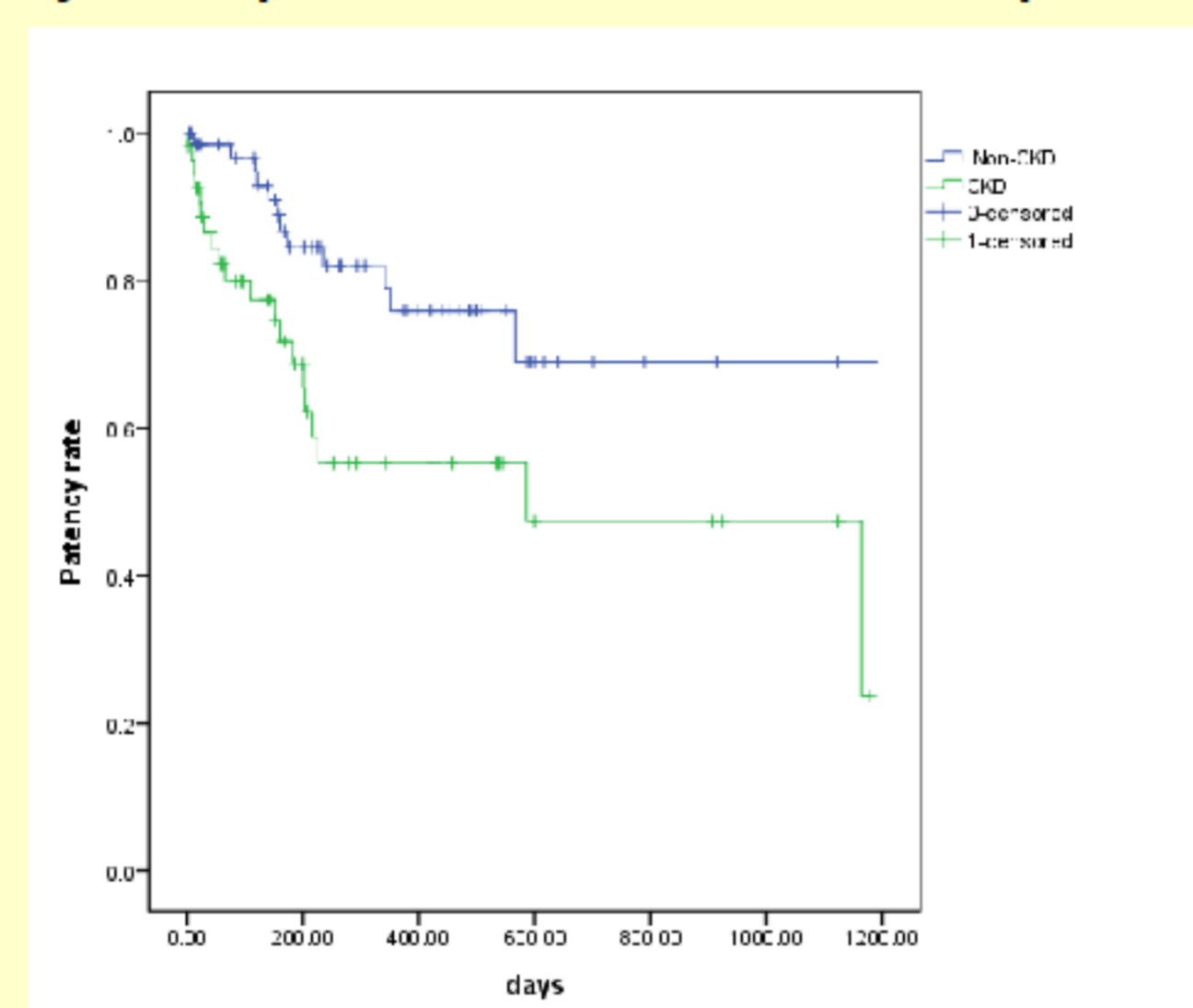
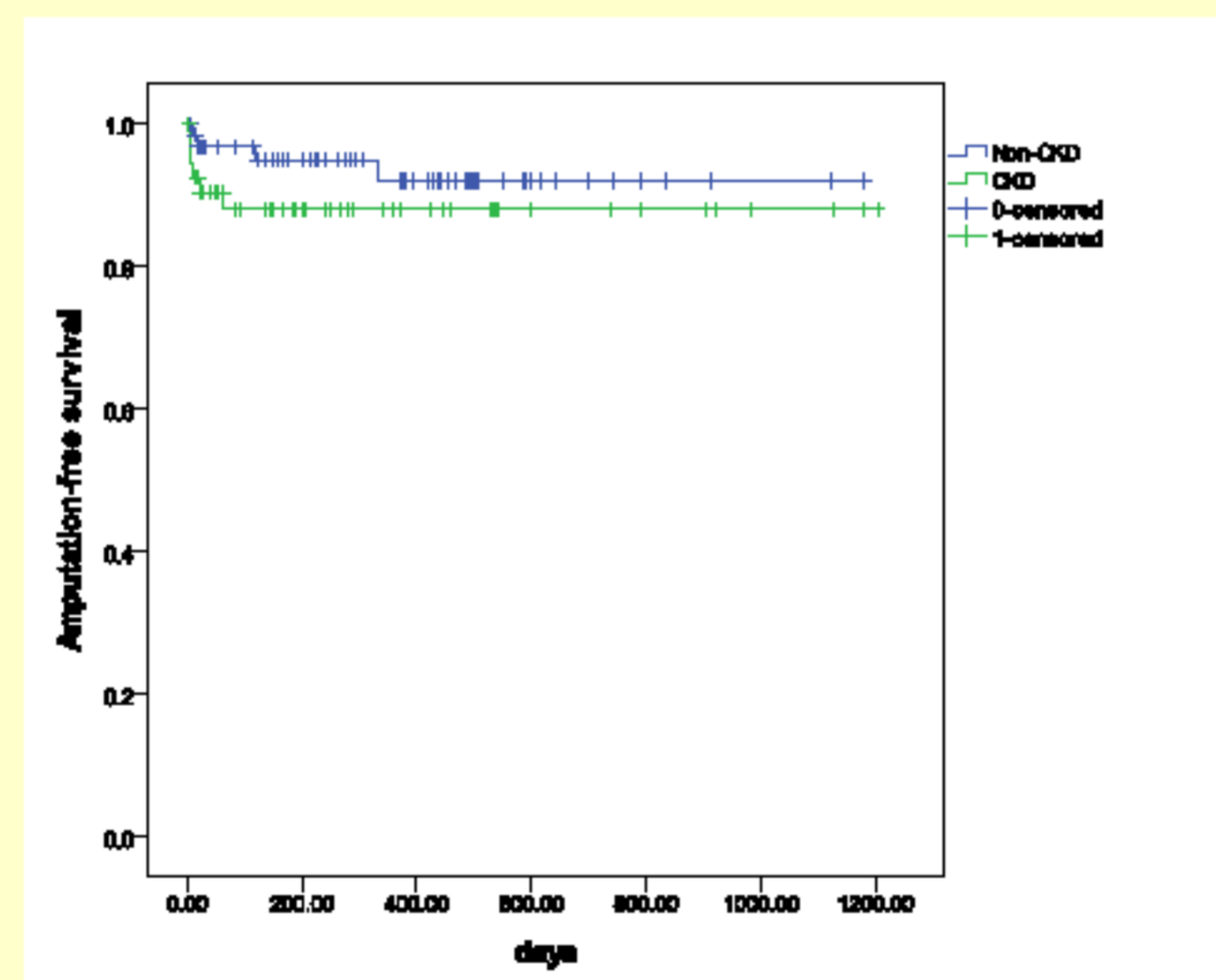


Fig 2. Amputation-free survival in patients with CKD and non-CKD patients



RESULTS

CKD group (n=54) suffered reduced patency rate compared with control group (n= 67) (68±7 vs. 84±5% at 6 months, 55±8 vs. 76±6% at 12 months after revascularization respectively, $p<0.01$). One-year amputation-free survival rate showed the tendency to decrease in CKD group (88±4% vs. 92±4%, $p=NS$). Critical limb ischemia and eGFR < 60ml/min/1.73 m² were significant predictors of loss of patency after revascularization of PAOD in CKD patients (HR=2.65, 95% CI: 1.29-5.45; $P<0.01$, HR=2.15, 95% CI: 1.03-4.50; $P<0.05$, respectively).

CONCLUSIONS

Patients with CKD showed significantly lower patency rates after revascularization for PAOD. The presence of critical limb ischemia and chronic kidney disease (eGFR < 60ml/min/1.73 m²) could be used to identify the patients who are at risk for reduced patency rate after revascularization.

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