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Effect of cilostazol on arteriovenous fistula in hemodialysis patients

Jae Wan Jeon[1], Hae Ri Kim[1], Young Rok Ham[2], Dae Eun Choi[2], Ki Ryang Na[2], Kang Wook Lee[2]
[1]Department of Internal Medicine-Nephrology, Chungnam National University Sejong Hospital, Korea, Republic of
[2]Department of Internal Medicine-Nephrology, Chungnam National University Hospital, Korea, Republic of

Objectives: The maturation and patency of permanent vascular access are critical in patients requiring hemodialysis. Although numerus trials have been attempted to achieve permanently patent vascular access, little have been noticeable. Cilostazol, a phosphodiesterase-3 inhibitor, has been shown to be effective in peripheral arterial disease including vascular injury-induced intimal hyperplasia. We therefore aimed to determine the effect of cilostazol on the patency and maturation of permanent vascular access.

Methods: This single-center, retrospective study included 194 patients who underwent arteriovenous fistula surgery to compare vascular complications between the cilostazol (n=107) and control (n=87) groups.

Results: The rate of vascular complications was lower in the cilostazol group than in the control group (36.4% vs. 51.7%; p=0.033), including maturation failure (2.8% vs. 11.5%; p=0.016). The rate of reoperation due to vascular injury after hemodialysis initiation following fistula maturation was also significantly lower in the cilostazol group than in the control group (7.5% vs. 28.7%; p<0.001). However, there were no significant differences in the requirement for percutaneous transluminal angioplasty (PTA), rate of PTA, and the interval from arteriovenous fistula surgery to PTA between the cilostazol and control groups.

Conclusions: Cilostazol might be beneficial for the maturation of permanent vascular access in patients requiring hemodialysis.

Dermographic and clinical characteristics of patients undergoing AVF surgery

Table 1 – Demographic and clinical characteristics of patients undergoing AVF surgery.

	Cilostazol group ($n = 107$)	Control group ($n = 87$)	p value
Demographic characteristics			
Male	79 (73.8%)	60 (69.0%)	0.455
Age (years)	64.3 ± 12.3	65.0 ± 12.6	0.726
Death	12 (11.2%)	13 (14.9%)	0.441
Follow-up duration (days)	704.1 ± 458.0	940.9 ± 575.1	0.002
Antiplatelet/anticoagulant agents			
Aspirin	26 (24.3%)	21 (24.1%)	0.979
Clopidogrel	21 (19.6%)	27 (31.0%)	0.067
Warfarin	2 (1.9%)	1 (1.1%)	0.686
Sarpogrelate	9 (8.4%)	6 (6.9%)	0.694
Comorbidity			
Diabetes	77 (72.0%)	64 (73.6%)	0.803
Hypertension	92 (86.0%)	68 (78.2%)	0.154
GN	9 (8.4%)	10 (11.5%)	0.472
PAD	10 (9.3%)	12 (13.8%)	0.331
PAD with PTA	6 (5.6%)	10 (11.5%)	0.138
CAD	33 (30.8%)	31 (28.7%)	0.480
HF	29 (27.1%)	24 (27.6%)	0.940
A.fib/A.flutter	9 (8.4%)	8 (7.6%)	0.848
CVA	30 (28.0%)	34 (39.1%)	0.104
Cause of ESRD			0.686
Diabetes	74 (69.2%)	57 (65.5%)	
Hypertension	22 (20.6%)	16 (18.4%)	
GN	6 (5.6%)	8 (9.2%)	
Others	5 (4.7%)	6 (6.9%)	

Afib, atrial fibrillation; A. flutter, atrial flutter; CAD, coronary artery disease; CVA, cerebrovascular accident; GN, glomerulonephritis; HF, heart failure (ejection fraction < 50%); PAD, peripheral artery disease; PTA, percutaneous transluminal angioplasty.

Comparison of vascular complications following AVF surgery between the cilostazol and control groups

Table 2 – Comparison of vascular complications following AVF surgery between the cilostazol and control groups.

	Cilostazol group ($n = 107$)	Control group ($n = 87$)	p value
Vascular complications	39 (36.4%)	45 (51.7%)	0.033
Maturation failure	3 (2.8%)	10 (11.5%)	0.016
Reoperation after maturation	8 (7.5%)	25 (28.7%)	<0.001
PTA (radiological interventions) after maturation	38 (35.5%)	39 (44.8%)	0.187
Number of PTA procedures	1.7 ± 1.1	2.2 ± 2.0	0.157
Interval between first PTA and vascular surgery (days)	337.4 ± 394.7	450.9 ± 543.2	0.300

PTA, percutaneous transluminal angioplasty.