Clinical Effectiveness and Nephrotoxicity of Venography using Small dose of Radiocontrast as a Venous Mapping in Pre-dialysis Patients

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Introduction : It has been recommended that the radiocephalic arteriovenous fistula (AVF) should be the first choice for vascular access for hemodialysis. However, it has a high incidence of early failure, which causes a decrease in the placement of the AVF. Venous mapping is essential to detect poor vascularity and to choose type of adequate vascular access before the operation. Venography is considered to be the gold standard of venous mapping for vascular access. But it has risk of radiocontrast nephrotoxicity. This study was designed to evaluate clinical effectiveness and radiocontrast nephrotoxicity of venography using small dose of radiocontrast as a venous mapping in pre- dialysis patients.

Methods : We enrolled 16 consecutive patients with stage 4 and 5 chronic kidney disease undergoing venography. We used 10- 15 ml of contrast dye for venography and evaluated cephalic vein of upper arm to central vein. Radiocontrast- induced acute renal failure was defined as a 20% decrease in the estimated glomerular filtration rate (GFR) from the baseline value at 4 days after the study. GFR was calculated using MDRD- GFR.

Results : Patient's mean age was 58±16 years and 11 patients (68.8%) had diabetes mellitus. Mean GFR was 18.8±5 mL/min/1.73m^2 (7- 30 mL/min/1.73m^2). Image quality of venography was good in all patients. Of the 16 patients, 2 patients showed total obstruction of cephalic vein. And 2 patients showed too small sized cephalic vein without obvious stenosis to create AVF. There was no significant difference in GFR between the pre- and post- study (18.8±5 vs. 18.3±6 mL/min/1.73m^2, p=0.229). Radiocontrast- induced acute renal failure developed (GFR: 17 to 13 mL/min/1.73m^2) in only one patient. But it completely recovered to baseline level seven days after the study with conservative treatment.

Conclusion : This study suggests that venography using small dose of radiocontrast is effective in venous mapping to detect veins suitable for AVF in pre- dialysis patients.

Key Words : 혈액투석, 동정맥루, 정맥조영술
Hemodialysis, Arteriovenous fistula, Venography