

혈액투석 환자에서 혈관통로의 동맥 미세석회화가 동정맥루 조기 기능부전에 미치는 영향

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The Impact of Arterial Micro-Calcification of Vascular Access on Early AVF Failure in Hemodialysis Patients

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Background: Vascular calcification is common in hemodialysis (HD) patients, and it is a significant predictor for cardiovascular mortality in HD patients. Also, vascular access calcification identified by plain radiography was reported as a risk factor for cardiovascular mortality in HD patients. But the relationship between arterial micro-calcification (AMiC) by pathologic study and patency of vascular access has been rarely reported. The aim of this study was to determine the impact of AMiC of vascular access on access patency in HD patients.

Methods: One-hundred six HD patients (Mean age; 59.6±12.9 years, Male/Female; 66/40, Percent of diabetes mellitus; 73%) receiving vascular access operation were included in this study. During the operation, we obtained partial arterial specimen and performed pathologic examination by von Kossa stain to identify AMiC. We investigated early access failure (complete obstruction of blood flow or severe stenosis requiring radiologic intervention or surgical correction of AVF within 1 year after the operation) between the patients with AMiC and those without AMiC.

Results: Mean duration of follow-up was 42.5±33.8 months and the incidence of AMiC was 38.7% (n=41). The form of vascular calcification is arterial medial calcification. Early access failure was occurred in 45 patients (42.5%), and mean time between the operation and access failure was 4.1±3.1 months (range, 1 to 12 months). The access failure was associated with older age (62.7±11.8, 57.3±13.2, p-value=0.032) and low BMI (23.3±2.9, 24.5±3.5, p-value=0.043). The early AVF failure rate was higher in patients with AMiC than those without AMiC (56.1%, n=23/41, vs. 33.8%, n=22/65, p-value=0.024). Diabetes, cardiovascular disease and cardiovascular death were not related to access patency. Kaplan-Meier analysis showed that the presence of AMiC significantly increased the risk for the access failure (Log rank=4.98, p-value=0.026).

Conclusion: This study demonstrates that AMiC of the vascular access is associated with early access failure in HD patients.

Key Words: 미세석회화, 동정맥루 기능부전, 혈액투석
Micro-Calcification, Early AVF failure, Hemodialysis