

말기신부전환자의 요골동맥 미세석회화의 병리소견

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The Pathologic Findings of Microcalcification of Radial Artery in End Stage Renal Disease Patients

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Aim: Vascular calcification, which is frequently observed in patients with end stage renal disease (ESRD), is known to be an independent risk factor of cardiovascular morbidity and mortality. Although radiologic imaging studies about vascular calcification are quite reported, microcalcification by histologic evaluation is rarely reported. We studied histologic analysis of microcalcification of the radial artery in ESRD patients received radiocephalic arteriovenous fistula (AVF) operation for hemodialysis (HD).

Methods: Arterial specimens were acquired from 30 ESRD patients with microcalcification and 29 ESRD patients without microcalcification as a control during the AVF operation. The microcalcification was diagnosed by von Kossa staining. Medial fibrosis and the changes of medial elastic fibers were evaluated by Masson trichrome stain and Verhoeff–van Gieson stain, respectively. Expression of medial smooth muscle actin and osteopontin were detected by immunohistochemistry.

Results: Of the 30 patients with microcalcification, 17 (56.7%) patients showed severe and diffuse calcification and 13 (43.3%) showed multiple spotted calcification. All of them were observed in the medial layer. The degree of medial fibrosis in the microcalcification group was more increased, compared to the control ($p=0.010$). Almost patients showed elastic fiber degradation (100% vs 89.7%, $p=0.143$). In the microcalcification group, the expression of smooth muscle actin was more decreased ($p=0.010$) and the expression of osteopontin more increased ($p=0.001$), compared to the control.

Conclusion: This study suggests that microcalcification arise from the transformation of vascular smooth muscle cells into osteopontin producing osteoblast–like cells and it be associated with medial fibrosis and elastic fiber degradation.

Key Words: 말기신부전, 혈관석회화, 요골동맥

End stage renal disease, Radial artery, Vascular calcification