

혈중 렙틴농도와 기저혈관상태 및 동정맥루 실패와의 연관성

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Serum Leptin, Pre-existing Vascular Disease, and Arteriovenous Fistula Maturation Failure

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Background: Adequate maturation of arteriovenous fistula (AVF) is crucial for maintaining long-term hemodialysis. Pre-existing vascular diseases may be related to AVF maturation failure. Recently, a growing proportion of incident dialysis patients are obese, and the adipokine leptin is regarded as a pivotal mediator between obesity and cardiovascular disease. This study is designed to explore the association between serum leptin and pre-existing vascular disease and AVF maturation failure in patients with end-stage renal disease (ESRD).

Methods: Vein samples from 62 patients were collected at the time of AVF creation near the site of AV anastomosis. Histological and immunohistochemical studies to identify intrinsic cells types in vascular walls were performed. Also, we analyzed the expression of the leptin receptor in vein. AVF maturation failure was defined as an AVF not possible to use successfully for hemodialysis by the third month after its creation.

Results: Mean age was 62.8±13.5 years, 38 were male, and the prevalence of obesity was 49.1%. AVF maturation failure occurred in 22 (35.5%) patients. Mean serum leptin levels were 2.02±1.43 pg/mL (log transformed), and the rate progressively increased from the lowest to the highest leptin tertile ($p=0.017$). Patients in the highest leptin tertile had significantly increased BMI, higher triglyceride, interleukin-6, and hs-CRP level but decreased HDL levels than those in the two lower tertiles ($p<0.001$). On histological examinations, they showed a significant degree of neointimal hyperplasia (13.5±6.9 vs. 18.9±7.25 vs. 25.9±12.9 μm in each tertile) and medial thickening (76.8±23.7 vs. 103.9±33.6 vs. 109.3±36.5 μm in each tertile). In addition, medial fibrosis became more severe with increased tertiles. Moreover, the majority of cells within the neointima were myofibroblast with a minority of contractile smooth muscle cells in patients with the highest tertile of leptin. However, leptin receptor staining had a negative association with serum leptin levels, suggesting leptin resistance in pre-existing vascular diseases.

Conclusions: Higher serum leptin levels are closely related to pre-existing vascular disease in hemodialysis patients, and it may contribute to AVF maturation failure. Leptin resistance may be involved in the possible relationship between serum leptin and vascular complications

Key Words: 렙틴, 동정맥루실패, 혈관이상

Leptin, AVF, Pre-existing vascular disease