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내장지방과 만성콩팥병 및 대사증후군과의 관계

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Association of Visceral Fat Area with Chronic Kidney Disease and Metabolic Syndrome Risk in the General Population

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Background: Advances in bioimpedance analysis (BIA) technologies now enable visceral fat area (VFA) to be assessed using this method. The aim of this study was to evaluate the clinical relevance and usefulness of VFA as a predictor of chronic kidney disease (CKD) and metabolic syndrome (MS), using BIA.

Patients and Methods: We identified 24,791 adults who underwent voluntary routine health checkups at Yeungnam University Hospital. In total 22,480 patients were recruited into our study. Participants were divided into 3 tertiles based on their VFA: low, middle, and high tertiles. CKD was defined as an estimated glomerular filtration rate (eGFR) <60 mL/min/1.73m^2.

Results: The higher tertile of VFA was associated with a higher prevalence of diabetes mellitus, hypertension, and male sex. Waist-to-hip ratio, body mass index, blood pressure, lean mass, body fat %, and fasting glucose, total cholesterol, triglyceride, GGT, AST, ALT, and uric acid levels all increased as the VFA tertile increased ($p<0.001$ for all variables). The prevalence of CKD was 6.9% in the low tertile, 13.9% in the middle tertile, and 25.2% in the high tertile ($p<0.001$). The prevalence of MS was 2.2% in the low tertile, 12.8% in the middle tertile, and 36.7% in the high tertile ($p<0.001$). The AUROC values for VFA were higher than those for BMI and WHR. For VFA, the sensitivity and specificity for predicting CKD were 62.66% (95% CI, 61.0-64.3) and 64.22% (95% CI, 63.5-64.9), respectively, and 77.65% (95% CI, 76.3-79.0), and 68.81% (95% CI, 68.1-69.5), respectively for predicting MS.

Conclusion: Our results demonstrated that the VFA, measured by BIA, is a simple method for predicting the risk of CKD and MS.

Key Words: 내장지방, 만성콩팥병, 대사증후군
Visceral fat, Chronic kidney disease, Metabolic syndrome