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우성다낭성신질환 환자에서 생체전기저항분석법을 이용한 영양평가방법의 유용성에 대한 고찰

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Nutritional Assessment of ADPKD using Bioelectrical Impedance Analysis in ADPKD Patients

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Introduction and Aims: In our previous study, autosomal dominant polycystic kidney disease (ADPKD) patients showed increased malnutrition risks as kidney function decline and abdominal volume increases. Malnutrition may increase morbidity and mortality when it is not appropriately assess and treated. However in ADPKD patients, proper method for nutritional status was not investigated. We evaluated clinical utility of bioelectrical impedance analysis (BIA) to assess nutritional status in ADPKD patients.

Methods: This study is cross sectional study with ADPKD patients who were registered at PKD clinic in Seoul National University Hospital who has been evaluated nutritional status with Subjective global asessment. By using Inbody S10, Biospace, Inc. BIA was done. Associations between SGA scale, abdominal volume and BIA parameters were analyzed. Total liver volume was measured by stereotactic volumetry using abdominal computed tomography (CT) scan and adjusted by the height. Total kidney volume was obtained by ellipsoid method.

Results: A total of 288 patients (150 male, 138 female) were included in the analysis. Mean age was 48.3 years and their mean eGFR was 65.3±25.3 mL/min/1.73m^2. Total 21 paitents (7.3%) were mild to moderately malnourished and 63 patients (21.7%) were at risk of malnutrition. BIA parameters related to nutritional status were segmental Phase angle, the ratio of extracellular water to total body water (ECW/TBW), soft lean body mass and BCM in total and male but only ECW/TBW and lower extremity phase angle (PhA_LE, sum of right leg and left leg phase angle) showed significant relation in female population. ECW/TBW showed positive correlation with heigh adjusted total abomonial volume (htTAV, sum of kidney and liver volume adjusted with height) with highest coefficient of non-parametric correlation (0.334, $p<0.01$) than SGA (-0.259) and PhA_LE (-0.220). PhA_LE showed negative correlation with htTAV. Comparing BIA parameters with ROC curve, ECW/TBW showed highest area under curve (0.762) with cutoff value >0.389, for malnutrition.

Conclusion: BIA can be useful tool for nutritional assesment in ADPKD patients. High ECW/TBW and low PhA_LE are indicator for malnutrition in ADPKD patients.

Key Words: 우성다낭성신질환, 영양, 생체전기저항분석법
Autosomal dominant polycystic kidney disease, Nutrition, BIA