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Nutritional status assessment of elderly patients in nursing home using bioimpedance spectroscopy: Interim analysis

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Objectives: Phase angle (PA), which is one of the bioimpedance spectroscopy (BIS) indices, has been studied to have a significant role in evaluating nutritional status and predicting clinical outcomes in critically-ill patients. This study is ongoing to investigate the clinical impact of PA on elderly patients living in nursing homes at intervals of 6-months, and we report the first measurement results as an interim analysis.

Methods: Residents who are living in nine nursing homes in relation to Myongji hospital and wrote informed consent were included in this study. PA were measured using BIS and demographic, anthropometric, and laboratory data were collected. We divided the patients into two groups according to the median PA values (High PA >3.65°; Low PA ≤3.65°). In addition to the comparison between the two groups, Pearson correlation and multivariate regression analysis were performed to verify the association between PA and nutritional markers.

Results: A total of 293 nursing home residents were enrolled in this study. Mean age was 82.4 years old, female was 220 (75.1%). Comorbidities and estimated glomerular filtration rate (eGFR) were not different between the two groups. However, high PA group showed higher body mass index (BMI) (high PA, 22.4±3.8 kg/m²; low PA, 19.0±3.4 kg/m², P<0.001) and mini nutritional assessment (MNA) score (high PA, 10.0±1.8; low PA, 7.9±2.3, P<0.001). In addition, anthropometric and laboratory data such as mid-arm circumference, calf circumference, hand grip strength, skin fold thickness and serum albumin levels were statistically higher in high PA group. In multivariate regression analysis, PA was significant factor for associating with MNA score after adjusting sex, age, BMI, lean tissue index, serum albumin, eGFR, and abdominal skin fold thickness (β=0.053, P=0.021).

Conclusions: We suggest that PA is a useful biomarker reflecting nutritional status in the elderly who are living in nursing homes using BIS.