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Phase Angle: A Promising Biomarker for Sarcopenia Detection in Malaysian Peritoneal Dialysis Patients

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Objectives : Sarcopenia, characterized by concurrent declines in muscle mass and function, is prevalent among peritoneal dialysis (PD) patients. The timely identification of this condition is essential, yet universal screening faces challenges due to intricate diagnostic algorithms and limited clinical resources. The Phase Angle (PhA), derived from bioelectrical impedance analysis (BIA), has emerged as a surrogate marker for sarcopenia in diverse populations. However, its validation in PD patients, particularly in Southeast Asian populations like Malaysia, is lacking. This study aims to explore PhA's potential as a non-invasive and cost-effective measure for detecting sarcopenia in Malaysian PD patients.
Methods : A single-center cross-sectional study involved 130 multi-ethnic PD patients at a tertiary government hospital in the Klang Valley, Malaysia. Participants, adult outpatients with at least six months of regular PD treatment and free from terminal illness, recent infections, surgeries, or biasing conditions, underwent sarcopenia assessment per the Asian Working Group for Sarcopenia (AWGS) 2019 diagnostic algorithm. PhA, measured with multi-frequency BIA at 50kHz, was evaluated for predictability using multivariable logistic regression. Receiver operating characteristics (ROC) analysis determined PhA's diagnostic accuracy, establishing an optimal cut-off value for desired sensitivity and specificity.
Results : Demographic characteristics aligned with national data, and sarcopenia was evident in 25.4% of PD patients. PhA emerged as a robust and independent predictor of sarcopenia, with an adjusted odds ratio (adjOR) of 0.147 (95% CI = 0.042-0.516; p = 0.003), highlighting its significant association. Notably, PhA exhibited excellent discriminative power, with an adjusted area under the curve of 0.818 ± 0.041 (bootstrapped 95% CI = 0.734-0.899, p < 0.001). The optimal PhA cut-off for sarcopenia detection in PD patients was ≤3.95° (81.8% sensitivity, 52.6% specificity).
Conclusions : Sarcopenia is prevalent among Malaysian PD patients, and PhA demonstrates promise as a practical screening tool for identifying multi-ethnic Malaysian PD patients at risk of sarcopenia.

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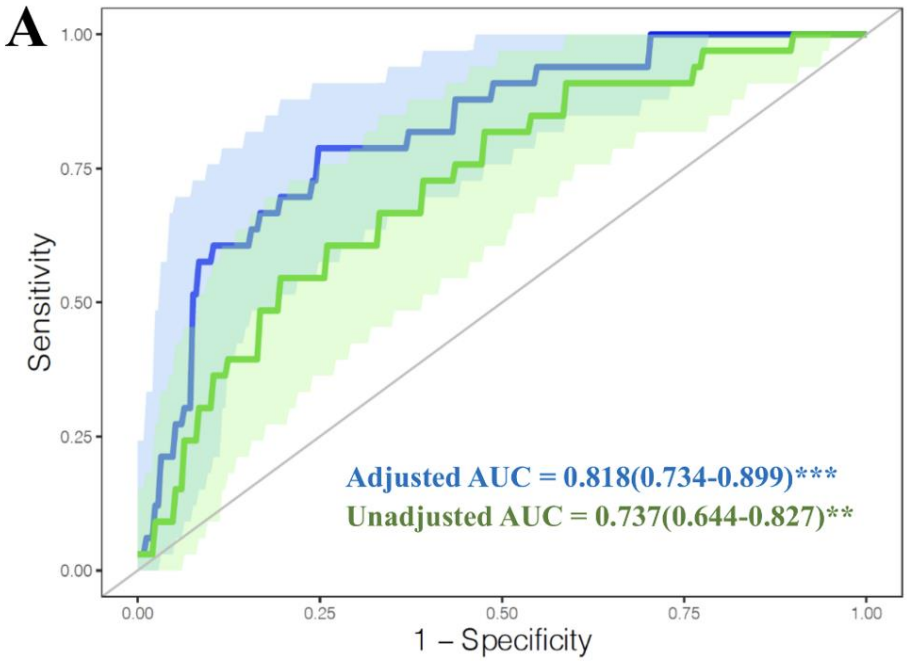
A
1.00
0.75
0.50
0.25
0.00
Sensitivity
0.00
0.25
0.50
0.75
1.00
1 – Specificity
Adjusted AUC = 0.818(0.734-0.899)***
Unadjusted AUC = 0.737(0.644-0.827)**