KSN SEOUL, KOREA 2023
April 27(Thu) - 30(Sun), 2023
Coex, Seoul, Korea

Abstract Type : Poster
Abstract Submission No. : 1802

Association between bioelectrical impedance phase angle and muscle health in patients receiving chronic hemodialysis

Jungho Shin[1], Jae Hyeon Park[3], Jae Yoon Park[4], Ran-hui Cha[2]
[1]Department of Internal Medicine-Nephrology, Chung-Ang University Hospital, Korea, Republic of
[2]Department of Internal Medicine-Nephrology, National Medical Center, Korea, Republic of
[3]Department of Rehabilitation Medicine, Hanyang University Guri Hospital, Korea, Republic of
[4]Department of Internal Medicine-Nephrology, Dongguk University Ilsan Hospital, Korea, Republic of

Objectives: Sarcopenia is prevalent in patients receiving chronic hemodialysis, which is associated with adverse prognosis. Thus, a convenient and reliable method for monitoring muscle health is required. This study investigated the utility of phase angle (PhA) to estimate muscle mass, muscle strength, and physical performance in patients on chronic hemodialysis.

Methods: Data were obtained from a 12-week, multicenter randomized trial that examined the effect of intradialytic neuromuscular electrical stimulation. The PhA and muscle mass were derived from bioelectrical impedance analyses monthly. In addition, muscle strength and physical performance were measured simultaneously.

Results: In total, 68 patients were included. PhA was linearly related to arm circumference, calf circumference, skeletal muscle mass index, gait speed, handgrip strength, and leg muscle strength (r=0.40, 0.45, 0.39, 0.55, and 0.36, respectively), and it was inversely related to timed up and go test (r=−0.48). The associations persisted even after the adjustment for age, sex, duration of hemodialysis, and presence of diabetes. The longitudinal slope of PhA was estimated using the linear regression model among 63 patients who had two or more measurements. There were 26 (41.3%) patients with decreasing PhA and 37 (58.7%) patients with stable or increasing PhA. Compared to those who had stable or increasing PhA, timed up and go tests had worsened over time in patients who had decreasing PhA (estimate 1.06 [95% confidence interval 0.35 to 1.76] seconds per 12-week; P=0.004), and the interaction with treatment of intradialytic neuromuscular electrical stimulation was not observed. Other measurements of muscle mass, muscle strength, and physical performance did not differ between patients who had decreasing PhA and stable or increasing PhA.

Conclusions: PhA appears to be a reliable marker for estimating and monitoring muscle health in patients receiving chronic hemodialysis. In particular, PhA may be strongly associated with timed up and go test.