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Relationship between fatigue and body composition parameters measured by bioimpedance analysis in hemodialysis patients

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Objectives : Fluid overloading and malnutrition occur easily in patients undergoing hemodialysis. BCM (body composition monitor) device may make volume control and recognition of body composition to be easy in hemodialysis patients. We aimed to evaluate fatigue change after application of BCM device, and tried to evaluate relationship between fatigue and several parameters.

Methods : We performed a single-center prospective study enrolled 32 patients undergoing hemodialysis.
All of enrolled patients were monitored by BCM device at the points (Baseline, after 6 weeks, and after 12 weeks). We have also measured a degree of fatigue in all patients during maintenance hemodialysis (Baseline, and after 12 weeks).

Results : After the BCM application, above parameters did not show significant difference at each point after 6 weeks and 12 weeks. Comparative analysis between patients with lower LTI (below 10 percentile of a reference population) and with normal LTI (more than 10 percentile of a reference population) did not also show significant differences of other parameters except a parameter, FTI at all points ($p<0.01$). However, the LTIs showed statistically significant negative correlations with degrees of fatigue at all-time points (Baseline, $r=-0.379$, $p=0.032$; after 12 weeks: $r=-0.368$, $p=0.038$, respectively). 81.2% of total enrolled patients showed a decrease of fatigue during hemodialysis adjusted by BCM device. Unfortunately, LTI, FTI, and ReOH did not show statistically significant tendency according to the time (LTI, $p=0.413$; FTI, $p=0.361$; Re(OH), $p=0.238$, respectively), however, only dry body weight showed a significant decrease according to the time ($p=0.004$).

Conclusions : Our results also showed a negative correlation between LTI and fatigue in hemodialysis patients with periodic use of BCM. These results may support strongly that LTI is an independent factor related with poor prognosis in dialysis patients. Also the periodic use of BCM in dialysis patients might have more meanings over acknowledge of body water composition.

Keywords : Bioimepedence analysis; Hemodialysis; End-stage renal disease