

Reproducibility of assessments of physical performance and protein-energy wasting

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Background

Patients on hemodialysis (HD) suffer from impaired physical performance and protein-energy wasting (PEW). Different assessments are available to measure these parameters. Reproducibility of these tests in HD patients are unknown.

Objective

To determine the reproducibility of assessments of physical performance and protein-energy wasting in HD patients

Methods

- DiapriFIT cohort: ongoing prospective multicenter study on the effects of nocturnal HD
- Study population: 31 patients on HD (2-4 times a week, 3-5 hours), mean age 55.3±21.2, 62% female
- Two baseline measurements (1 and 2) are performed by a single investigator (7.7±3.7 weeks interval)
- Statistical analyses: paired t-test and intraclass correlation coefficients

Assessments of Physical Performance

- Short Physical Performance Battery (SPPB: gait speed, chair rises and balance)
- 6-Minute walk test
- Handgrip strength
- 7-Day physical activity monitor (PAM)

Assessments of Protein-energy wasting

- Visual Analogue Scale (VAS) appetite
- Mid-upper arm muscle circumference (MUAMC)
- Subjective Global Assessment (SGA)
- Fat free mass (FFM) and fat mass (FM) assessed by bioelectrical impedance spectroscopy

Results

Apart from the PAM activity score and VAS appetite, all tests showed good reproducibility. Regarding PAM and VAS, the two measurements did not differ systematically (paired t-test, p>0.05), indicating that variability was caused by random patient-related factors. The second measurement of SPPB was slightly higher than the first (paired t-test, p<0.05), which could be attributable to a learning effect.

Table 1. Variables of physical performance and PEW

Assessments	N	Measurement 1 (mean±SD)	Measurement 2 (mean±SD)	ICC (95% CI)
SPPB (ranking 1-12)	24	8.2±2.6*	9.4±1.7*	0.79 (0.47-0.92)
6-Minute walk test (m)	19	350.2±138.0	351.8±116.0	0.93 (0.79-0.97)
Handgrip strength (kg)	30	27.1±9.8	26.3±10.1	0.92 (0.84-0.96)
PAM activity score	20	14.2±4.4	13.3±5.3	0.47 (0.00-0.73)
VAS appetite (cm)	31	7.6±2.2	7.5±2.2	0.37 (-0.00-0.64)
MUAMC (cm)	29	25.1±5.0	25.5±3.7	0.81 (0.65-0.92)
SGA (ranking 1-7)	31	5.7±0.8	5.7±0.8	0.77 (0.63-0.91)
FFM (kg)	19	34.8±7.8	35.4±6.7	0.78 (0.48-0.91)
FM (kg)	19	32.5±14.7	32.4±13.9	0.98 (0.94-0.99)

*P-value <0.05

Conclusion

Physical performance and PEW assessment tests showed good reproducibility in HD patients. Careful interpretation of VAS appetite, PAM activity score as well as SPPB score is warranted.