BIOSPACE	Overseas Sales and Marketing Dept.	Assessment of Body composition in Peritoneal Dialysis	Update: 2012-07-18
			Overseas Sales and Marketing Dept.

Assessment of Body composition in Peritoneal Dialysis patients using Bioelectrical impedance and Dual-Energy X-ray Absorptiometry.

Conclusion:

When compared lean body mass using multi-frequency bioelectrical impedance (InBody720) an dual-energy X-ray absorptiometry(DEXA) in PD patients, the author found out that lean body mass was highly correlate with good method agreement using DEXA as the reference test (r=095) and InBody 720 is useful tool for determining body composition in PD patients.

1. Research period: Unknown
2. Location of research: Royal Free Hospital, London, UK
3. Researcher: A Furstenberg an A Davenport
4. What were measured?: Fat free mass, Segmental lean mass from DEXA (Hologic QDR Discovery W model, USA) and Multi-Frequency BIA (InBody720, Biospace, Seoul, Korea)
5. Characteristic of patients

Table 1. Patient demographics(n=104)

Characteristic	Mean±SD	Range
Age, years	57.1±17	22-86
Height, cm	163.2±11.3	133-185
Weight, kg	67.5±15.8	25.1-111
Body mass index	25.3±4.9	16.2-36.7
Body surface area, m^2	1.9±0.3	1.1-2.5
Vintage of dialysis, years	6.2±8.3	0.1-16.9

6. Results

Table 2. Patient whole-body and segmental composition measured by DEXA and MF-BIA in 104 stable peritoneal dialysis patients

	DEXA (mean ± SD)	MF-BIA (mean ± SD)
Body weight, kg	69.4 ± 15.0	70.0 ± 15.0
Fat-free mass, kg	47.6 ± 11.0	47.5 ± 11.6
Fat mass, kg	21.8 ± 8.2	22.5 ± 9.4
% body weight	31.0 ± 8.5	31.7 ± 10.3
Total lean body mass, kg	45.5 ± 10.6	44.7 ± 11.0
Lean trunk, kg	24.0 ± 5.5	21.1 ± 4.9
Lean left arm, kg	2.3 ± 0.8	2.5 ± 0.8
Lean right arm, kg	2.6 ± 0.8	2.5 ± 0.8
Lean left leg, kg	6.4 ± 1.8	7.2 ± 2.0
Lean right leg, kg	6.6 ± 1.9	7.2 ± 2.0
Bone mineral content, kg	2.1 ± 0.5	2.8 ± 0.8

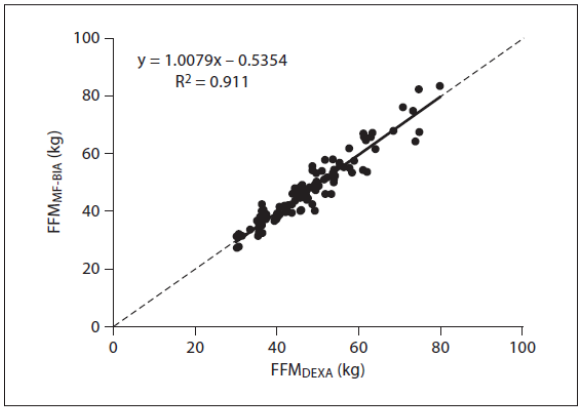

Fig. 1. Plot of total body FFM by DEXA and by MF-BIA. – – – = Identity line, —— = trendline.

Table 3. Correlation of body composition measurements DEXA vs. MF-BIA

	r	95%CI	P
Fat free mass	0.95	0.93-0.97	<0.0001
Fat mass	0.93	0.90-0.96	<0.0001
Lean Trunk	0.90	0.86-0.93	<0.0001
Lean Left arm	0.86	0.80-0.90	<0.0001
Lean right arm	0.84	0.77-0.89	<0.0001
Lean left leg	0.89	0.83-0.92	<0.0001
Lean right leg	0.90	0.85-0.93	<0.0001

Regarding Fat free mass, MF-BIA Lean body mass (or Fat free mass) was highly correlated with good method agreement using DEXA as the reference test (r=0.95, p<0.0001; bias-0.88kg, 95%CI-1.53 to 0.23kg). Similarly, high correlation and good method agreement were found for fat mass (r=0.93, p<0.0001; bias0.69kg, 95% CI 0.03-1.36kg). Segmental analysis of LBM revealed strong correlations between LBM for trunk, left and right arms and legs (r=0.90, 0.84, 0.86, 0.89 and 0.90, respectively, p<0.0001).

7. Consideration

There are significant correlations between DEXA and MF-BIA but there was a minimal bias on segmental lean body composition for the arms and legs. Also, there was variability in lean mass assessment for the legs compared to the arms and a greater variability in the trunk compared to DEXA.

This could have been due to differences in hydration status between the assessments. MF-BIA may potentially be a useful tool for determining nutritional status in PD patients.

Where it was listed

American Journal of Nephrology 2011; 33:150-156 (IF=2.539)

Comments from clinical research team

- Use of different DEXA Model (Hologic)
  Previous research papers used GE Lunar model for the assessment of body composition analysis and compared it with InBody. However, this research was conducted with Hologic model.
- DEXA measured more fat-free mass in trunk with edema.
  PD patients often have more body water to filter wastes and water through Peritoneal, and DEXA measured more fat-free mass in trunk with edema. This implies that DEXA may overestimate fat-free mass since DEXA cannot measure edema.

About the author and hospital

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Biospace has been supporting the author and Royal Free Hospital has 3 Inbody720 model.