REEVALUATION OF PERITONEAL DIALYSIS PATIENTS' BODY COMPOSITION AFTER 12 MONTHS OF PD TREATMENT, BY MEANS OF DUAL ENERGY X-RAY ABSORPTIOMETRY, BIOIMPEDANCE AND SUBJECTIVE GLOBAL ASSESSMENT

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Introduction:

We have previously shown that obesity and muscle wasting was common in a population of 72 PD patients ("original population"), and that there were considerable differences between nutritional status as assessed by dual-energy X-ray absorptiometry (DXA), bioimpedance (BI) and subjective global assessment (SGA). PD prevalent patients who were still treated by PD were reassessed after 12 months to measure changes in nutritional status.

DXA

Bioimpedance

Methods:

36/72 PD patients ("current population") were re-examined by DXA, BI and SGA. Measurements included lean tissue mass (LTM), fat tissue mass (FTM) and, for BI, overhydration (OH), intracellular water (ICW) and extracellular water (ECW). LTM and FTM were indexed to body area (LTI and FTI respectively). Conventional biochemical and clinical variables were assessed. Results were compared to values for normal individuals. The 36 patients that were not included in the follow up, 6 had NTX, 8 went on to HD, 8 died, 7 could not participate due to severity of health condition, and 6 declined. "Over" normal was defined as >90th percentile, and "Under" as <10th percentile.

Results:

Insignificant changes were found for :

- Overall body weight (BW): -0,49 ± 2,97 kg (95% CI -1,77-0,79).
- OH was found by BI (-0,28 ± 1,51L; 95% CI -0,78-0,23).

There was a significant FTM increase and a LTM decrease.

BI measurements were significant for both FTM (2,84 ± 4,36 kg p<0.05) and LTM (- 2,86 ± 4,78 kg p<0.05).

Bioimpedance BI				
		Previous year		Follow up
		Original population	Current population	
LTI	Over	13%	8%	6%
	Normal	59%	66%	44%
	Low	28%	25%	50%
FTI	Over	54%	47%	19%
	Normal	41%	41%	66%
	Low	5%	11%	14%

Table 1. Changes in nutrition groups in PD patients as measured by bioimpedance
LTI: Lean Tissue Index; FTI: Fat Tissue Index

DXA Fat			
Percentiles	Previous year		Follow up
	Original population	Current population	
>90 th	43%	39%	33%
Normal	46%	39%	53%
<10 th	11%	22%	14%

Table 2. Changes in fat percentiles in PD patients as measured by DXA
DXA software offers only population references for fat tissue (FTM) and not for LTM

Changes measured by DXA were insignificant for both FTM (0,35 ± 3,86 kg; 95% CI -0,94- 1,63) and LTM (-0,41 ± 2,99 kg; 95% CI -1,41-0,59).

Subjective Global Assessment SGA			
	Previous year		Follow up
	Original population	Current population	
Normal (A)	48%	47%	39%
Malnourished (B+C)	52%	53%	61%

Table 3. Changes in nourishment in PD patients evaluated by SGA
B: Moderately malnourished; C: Severely malnourished

There was a significant difference for FTM (–1,75± 4,41kg p<0.05), but not for LTM (-0,64 ± 4,59; p>0.05) between DXA and BI measurements.

	Bioimpedance LTI			
SGA Nourishment	Over	Normal	Low	Total
Normal (a)	1	6	7	14
Moderately Malnourished (b)	1	10	10	21
Severely malnourished (c)	0	0	1	1
Total	2	16	18	36

Table 4. Comparison of bioimpedance and SGA evaluation of PD patients body composition

There was a better agreement with no significant difference between BI and SGA evaluation in the follow-up (chi squared 0,89; p 0,34).

Conclusions:

Weight changes were minimal in a 12 month follow up. FTM increased and LTM decreased. However, obesity was less common at follow-up. DXA detected lesser changes than BI. Obesity was generally less common in the follow up population, while muscle wasting was more common. The results thus support and quantify the concept that dialysis leads to progressive muscle wasting, and suggest that muscle loss is replaced by fat.

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