EVOLUTION OF BODY COMPOSITION AND CHARACTERISTICS OF THE MEMBRANE PERITONEAL IN PATIENTS ON PERITONEAL DIALYSIS (PD) AND THEIR POSSIBLE RELATIONSHIPS

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INTRODUCTION

Avoid overhydration and malnutrition are major targets in the treatment of patients with chronic kidney disease since both situations involve an increase in morbidity and reduced survival. In patients treated with peritoneal dialysis both situations are common and difficult to solve. At present, the incorporation of routine techniques of bioimpedance has been a great help in a better evaluation of these patients

OBJECTIVE

To know the body composition of patients on peritoneal dialysis (PD) and its evolution over time, and analyze the possible relation of the parameters of hydration and nutrition, and the characteristics of the peritoneal membrane and dialysis adequacy.

MATERIAL AND METHODS

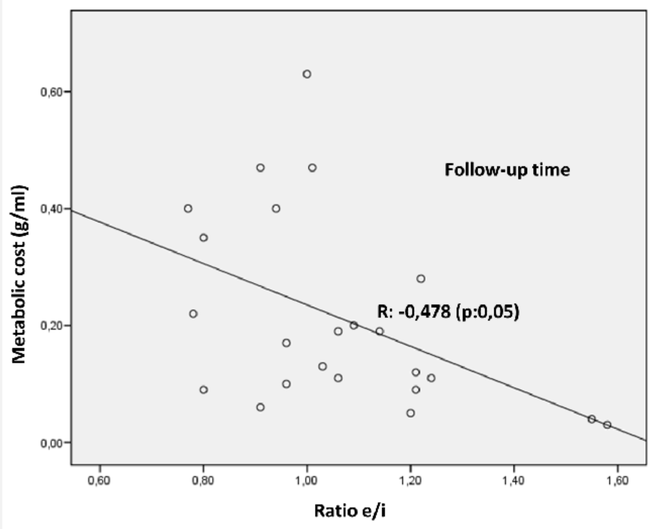
We analyzed the body composition of 43 stable PD patients by multifrequency bioimpedance spectroscopy (BIS), the characteristics of the peritoneal membrane obtained by peritoneal equilibration test with 3.86% or 4.25% glucose solution (TEP-modified), D/P creatinine and phosphate, D/D0 glucose screening sodium and free water ultrafiltration, and metabolic cost (CM) of the test (glucose absorbed during the test to obtained ultrafiltration), the adequacy of dialysis (KT/V and weekly creatinine clearance); and protein catabolic rate (PCRn). In 35 patients the same data from the last available follow-up period are analyzed. We performed univariate statistical and analytical description for paired samples. Results are expressed as mean +/- SD. Correlation coefficients were calculated using Pearson`s test

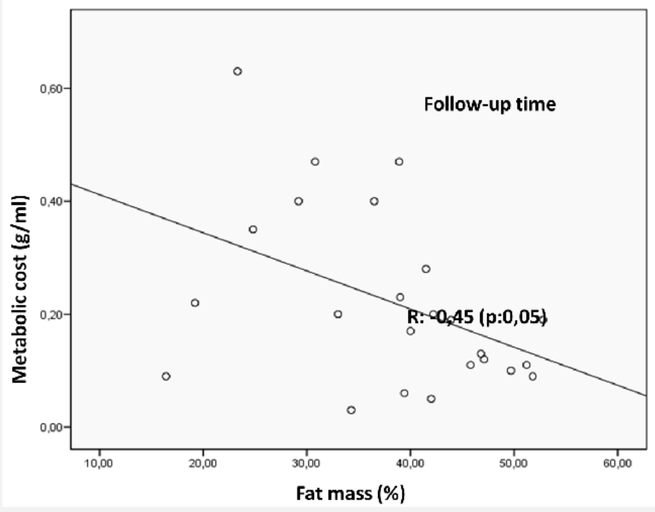
RESULTS

In 43 patients, 28 males and 15 with diabetes mellitus, with an average age of 68 and variable time on PD periods between 4 and 31 months (median 7 months) overhydration average was 1.2L (6.8% of extracellular water). At follow-up (median: 12months, p25: 7, p75: 19) it was observed a slight increase in weight and hydration, and expected changes in residual renal function (p: 0.00) and D / P creatinine (p: 0.02). (Table 1). Over time there was an increase in metabolic cost according to changes in D/P creatinine and D/D0 glucose but with mínimal variations in overhydration, because the use diuretics to maintain diuresis. (figures 1 and 2).

	Basal time (n=43)	Follow-up time (n=35)	p
Weight (Kg)	68,6 ± 11 (43 – 90)	70 ±9,7 (49 – 82,6)	NS
RRF (ml/min)	5,25 ± 3,3 (0 – 15)	3,34 ± 3 (0 – 13,5)	0,00
Diuresis (L)	1,2 ± 0,6 (0 – 2,65)	0,9 ± 0,7 (0 – 2,3)	0,02
Albúmina (g/dl)	3,6 ± 0,34 (2,6 – 4,1)	3,54 ± 0,4 (1,8 – 4,1)	NS
OH (L)	1,2 ± 1,4 (-1,2 – 4,1)	1,5 ± 1,6 (-1 -4,5)	NS
OH/ECW (%)	6,8 ± 8,5 (-11 - 22,7)	8,1 ± 8,8 (-7,7 – 24)	NS
ECW/TBW (%)	50,2 ± 4,6 (42,7 – 64)	50 ± 7,8 (29 – 75)	NS
TBW/weight (%)	47 ± 7,5 (34 -69)	46,2 ± 7,4 (31 -60)	NS
Ratio E/I	1 ± 0,14 (0,74 – 1,27)	1,03 ± 0,23 (0,68 – 1,58)	NS
BMI	27,2 ± 4 (17,3 – 34,4)	27,1 ± 3,8 (16,8 -36,23)	NS
BCM (Kg)	17,3 ± 6,6 (5,3 – 38)	16,94 ± 7,6 (6,4 – 40)	NS
LTM	47,5 ± 13 (22,4 – 75,4)	48,9 ± 15,3 (26 – 78,6)	NS
Fat	37,3 ± 10 (16,8 – 55,4)	37,6 ± 10,2 (15,3 – 52,8)	NS
Phase angle (50º)	4,58 ± 1,05 (3,06 – 6,9)	4,47 ± 1,2 (2,6 – 6,8)	NS
KTV total	2,28 ± 0,57 (1,31 – 3,97)	2,09 ± 0,63 (1,18 – 3,85)	NS
Clcr weekly	81,7 ± 26,6 (43,8 – 180)	68,5 ± 28,5 (44 – 164)	0,04
D/P cr	0,65 ± 0,11 (0,41 – 0,86)	0,7 ± 0,11 (0,43 – 0,88)	0,02
D/P fosfato	0,65 ± 0,11 (0,41- 0,88)	0,66 ± 0,13 (0,35 – 0,9)	NS
D/D0 glucosa	0,34 ± 0,1 (0,14 – 0,55)	0,29 ± 0,13 (0,15 - 0,48)	0,09
PCRn (g/Kg/dia)	1,09 ± 0,3 (0,55 – 1,89)	0,99 ± 0,19 (0,67 – 1,34)	NS
Free water/V60 (%)	40 ± 14,8 (5 – 61)	34,3 ± 14,4 (40 – 67)	NS
Drop Na (%) (t60)	4,45 ± 2,35 (0,7 – 7,63)	4,3 ± 2,3 (0,8 – 10,2)	NS
MC (g/ml)	0,18 ± 0,21 (0,01 – 0,92)	0,22 ± 0,15 (0,03 – 0,63)	NS

RRF: residual renal function; OH: overhydration; ECW: extracellular water; ICW: intracellular water; TBW: total body water; E/I: extra/intra- cellular water; BMI: Body mass index; BCM: body cellular mass; LTM: lean tissue mass; Fat: fat mass (%) ; ;PCRN: protein catabolic rate normalized; MC. Metabolic cost, V60: volume drained 60min; drop Na (%): decrease in [Na] peritoneal drained t60 respect [Na]t0.





CONCLUSION

The use of bioimpedance techniques for estimating body composition allows a better adjustment treatment of PD patients by minimizing the amount of hydration that often accompanies these type of patients. Over time the peritoneal membrane allows a greater solutes transport, and rising the metabolic rate. Although it is possible that the increase in the metabolic cost were the bases of the increase in fat mass and extracellular water, this study failed to showing it (maybe we use diuretics to maintain diuresis) . More extensive and prolonged studies are necessary to confirm these findings. as

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