WHAT ARE THE RELATIONSHIPS BETWEEN PERITONEAL SOLUTE TRANSPORT AND PERITONEAL REABSORPTION IN 8-H PROLONGED PET?

Authors: Maria Isabel Troya-Saborido[1,2], Josep Bonet-Sol[1,2], Josep Teixidó-Planas[1]
1.Nephrology Department, H. Universitari Germans Trias i Pujol.
2. REMAR Group, Health Science Research Institute Germans Trias i Pujol, Can Ruti Campus, Badalona, Spain

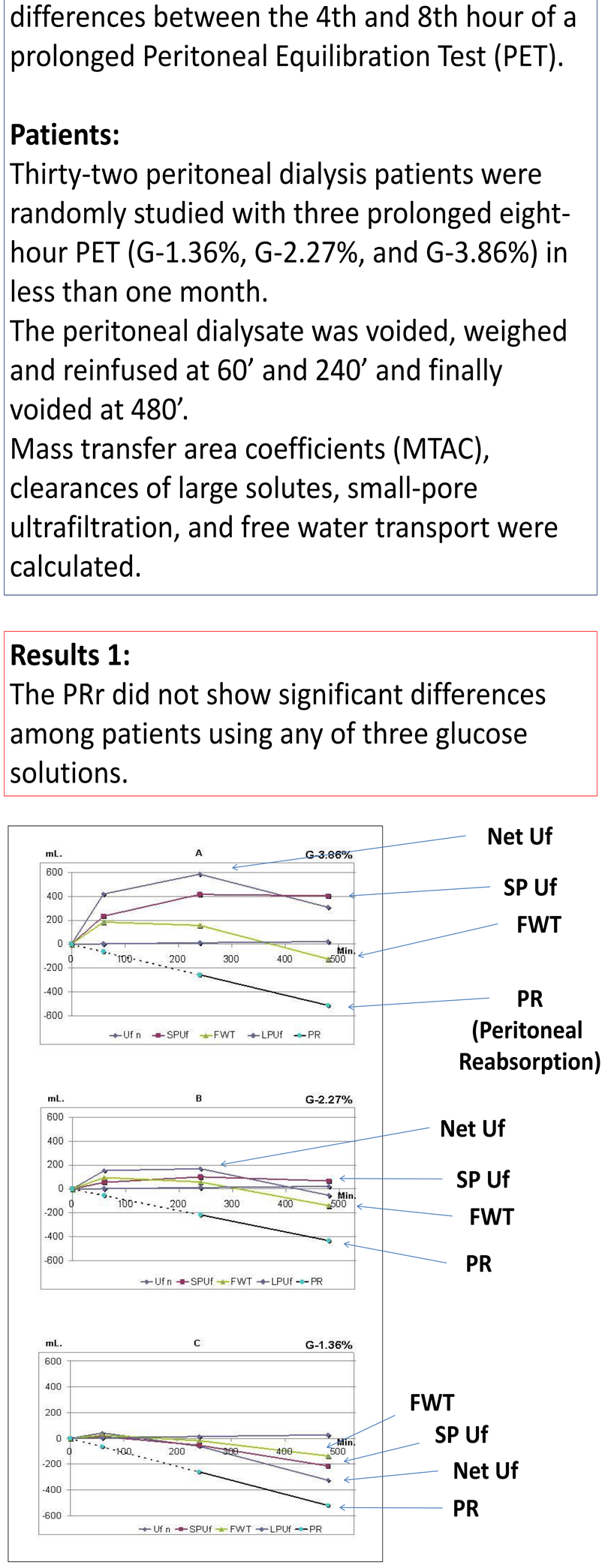
Introduction:
Patients with high peritoneal solute transport show low ultrafiltration and high peritoneal reabsorption.
However the relationships between solute transport and peritoneal reabsorption have been scarcely studied.

Aims:
To correlate the solute transport parameters with the Peritoneal Reabsorption rates (PRr) (mL/min), using three different glucose solutions.

Methods:
The Peritoneal Reabsorption rates were obtained by means of the effluent volume differences between the 4th and 8th hour of a prolonged Peritoneal Equilibration Test (PET).

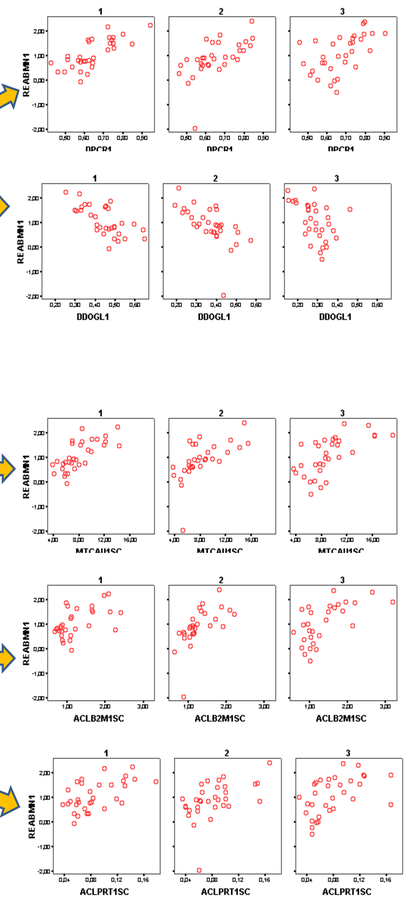
Patients:
Thirty-two peritoneal dialysis patients were randomly studied with three prolonged eight-hour PET (G-1.36%, G-2.27%, and G-3.86%) in less than one month.
The peritoneal dialysate was voided, weighed and reinfused at 60' and 240' and finally voided at 480'.
Mass transfer area coefficients (MTAC), clearances of large solutes, small-pore ultrafiltration, and free water transport were calculated.

Results 1:
The PRr did not show significant differences among patients using any of three glucose solutions.



Results 2:
Good or strong correlations were found between PRr and the solute transport parameters (r= 0.361, p=0.042 to 0.754, p<0.001).

	Glu 1.36 %	Glu 2.27%	Glu 3.86%
PRr 4-8h (mL/m)[1]	1.09 ± 0.59	0.90 ± 0.75	1.07 ± 0.76
Spearman's "rho"	(r= ; P=)	(r= ; P=)	(r= ; P=)
D/P Urea	0.683 ; <0.001	0.598 ; <0.001	0.537 ; 0.002
D/P Creatinine	0.690 ; <0.001	0.711 ; <0.001	0.633 ; <0.001
D/Do Glucose	-0.637 ; <0.001	-.710 ; <0.001	-0.560; 0.001
MTAC Urea[(2)]	0.553 , 0.001	0.448 ; 0.010	0.361 ; 0.042
MTAC Creatinine[(2)]	0.720 ; <0.001	0.663 ; <0.001	0.598 ; <0.001
MTAC Glucose[(2)]	0.657 , <0.001	0.698 ; <0.001	0.510 ; 0.003
MTAC Urate[(2)]	0.737 ; <0.001	0.754 ; <0.001	0.709 ; <0.001
MTAC Phosphate[(2)]	0.730; <0.001	0.691 ; <0.001	0.548 ; 0.001
MTAC Potassium[(2)]	0.341 ; 0.056 (NS)	0.209 ; NS	0.426 ; 0.015
Cl β-2-m-[(2)]	0.509 ; 0.005	0.809 ; <0.001	0.614 ; <0.001
Cl Albumin-[(2)]	0.457 ; 0.013	0.583 ; 0.001	0.667 ; <0.001
Cl Total Protein-[(2)]	0.535 ; 0.002	0.573 ; 0.001	0.578 ; 0.001
Cl Ig-G-[(2)]	0.373 ; 0.035	0.430 ; 0.018	0.628 ; <0.001
Cl Ig-A-[(2)]	0.130 ; NS	0.256 ; NS	0.460 ; 0.009



Results 3:
Patients with high peritoneal reabsorption rates (High tertile: PRr ≥ 1.50 mL/min) showed high solute transport parameters compared with those of low reabsorption rates (Low and middle tertiles: PRr < 1.50 mL/min) as shown with 1.36% glucose solution:

	PRr < 1.50 (n=21)	PRr ≥ 1.50 (n=11)	Wilcoxon
D/P Urea	0.82 ± 0.06	0.87 ± 0.04	0.002
D/P Creatinine	0.60 ± 0.10	0.73 ± 0.09	0.001
D/Do Glucose	0.48 ± 0.08	0.37 ± 0.08	0.002
MTAC Urea	15.35 ± 3.40	17.83 ± 3.34	ns(0.065)
MTAC Creatinine	8.29 ± 3.16	12.00 ± 4.08	0.002
MTAC Glucose	8.10 ± 2.60	10.75 ± 2.19	0.003
MTAC Urate	7.02 ± 2.31	10.12 ± 2.37	0.001
MTAC Phosphate	6.58 ± 2.07	9.70 ± 2.16	0.001

Results 4:
Similar results were obtained with 2.27% and 3.86% glucose solutions. Middle and large molecule clearances (β-2-microglobulin, Albumin, total protein and Ig-G) showed also significant correlations (r=0.373,p=0.035 – 0.809, p<0.001) and the clearances of low versus high PRr displayed as well significant differences (p= 0.027 – 0.007).

Conclusions:
1. The peritoneal reabsorption rates calculated as the effluent volume difference between the 4th and 8th hour of a Peritoneal Equilibration test, have moderate-to -strong correlations with solute transport parameters.
2. Patients with high solute transport showed high peritoneal reabsorption rates.

DOI: 10.3252/pso.eu.54ERA.2017