

# The effect of diabetes on peritoneal exchange qualities in short- and long-term periods

Sir,

Peritoneal dialysis (PD) has been considered increasingly as a standard renal replacement therapy for two decades. The efficacy of PD can be assessed by peritoneal equilibration test (PET). This efficacy of peritoneal membrane to exchange ions and nutrients can be changeable over time.<sup>[1]</sup> In fact, the quality of peritoneal efficacy and transfer rate can be important about the quality of renal replacement therapy for a long duration and give strategic clues about the patient clinical outcome. In a cross-sectional study, 24 cases affected to end stage renal disease were entered to study. The peritoneal efficacy tests were measured after 8 h of fasting by instillation of 2 l of 4.25% dialysate fluid and the measurement of urea, creatinine, and sodium and dextrose concentration in dialysate fluid and plasma levels after 4 h. The PET and metabolic indices results in 16 cases with diabetes and 8 cases without diabetes has been shown in Tables 1 and 2 which show all PET indices include dialysate/plasma of substances such as urea, sodium, creatinine, and dextrose diffusion ratio (D/D0) did not differ in diabetes

and nondiabetes, in addition short-term (5 months in average) and long-term (24 months in average) had not any effect on PET indices and most metabolic profiles were same between two groups except that in nondiabetes with long-term PD, albumin falls significantly compared to diabetes.

Peritoneal sclerosis may be occurred in prolonged PD by multiple mechanisms such as transition of epithelial cell to mesenchymal and angiogenesis, and other factors may also play a role in these changes such as exposure to high glucose, non physiological dialysis fluids, peritonitis, and uremia.<sup>[2]</sup>

Changes of PET occur with passing time; it was evaluated earlier by Rocco *et al.* that they showed D/P creatinine increase in a period of 6.7 months.<sup>[3]</sup> While in similar study, these changes were not significant after 7 months<sup>[4]</sup> some peritoneal changes appear between 1-week and 1-month post-PD that may be considerable after 1-year.<sup>[5]</sup> Our study show that peritoneal efficacy characters has not been changed at least 24 months in both diabetes and nondiabetes, which is in agreement with Passlick-Deetjen *et al.* findings that demonstrate PET values change significantly after 36 months of PD in adults.<sup>[1]</sup> Our study show PET indices in diabetes and nondiabetes do not change for at least 24 months after the dialysis initiation, but some metabolic changes occur in them that is not related to peritoneal efficacy; during this period of time (24 months), albumin in nondiabetes group drop significantly. Unfortunately, this study shows

**Table 1:** PET and metabolic changes in diabetes and nondiabetes

	Duration	Age	Dialysate/Plasma			D/D0	UF	Kt/V	Hb	Urea	Cr	Alb	ESR
			Urea	Cr	Na								
Diabetes	15±4	62±10	0.80±0.3	0.70±0.5	0.94±0.1	0.44±0.1	830±700	1.9±0.2	10±1.4	109±41	7.5±3	3.7±0.5	63±33
P value	0.9	0.8	0.9	0.9	0.3	0.8	0.8	0.6	0.009	0.6	0.1	0.1	0.5
Non diabetes	15±5	61±18	0.81±0.2	0.69±0.5	0.80±0.1	0.46±0.1	760±500	2.1±0.3	12±1.7	100±33	7.9±5	4±0.4	63±31

PET: Peritoneal equilibration test, ESR: Erythrocyte sedimentation rate. Data expressed as Mean±SD. Statistical analysis of data was done by Students *t* test. *P*>0.05 was considered significant

**Table 2:** PET and metabolic changes in both diabetes and nondiabetes from short term to long term after PD initiation

	Duration	Age	Dialysate/Plasma			D/D0	UF	Kt/V	Hb	Urea	Cr	Alb	ESR
			Urea	Cr	Na								
Diabetes	15±4	62±10	0.80±0.3	0.70±0.5	0.94±0.1	0.44±0.1	830±700	1.9±0.2	10±1.4	109±41	7.5±3	3.7±0.5	63±33
Short term	5±1	59±10	0.77±0.1	0.75±0.2	0.9±0.03	0.4±0.1	1028±300	1.6±0.2	10.7±1.1	123±48	8±2.8	3.7±0.5	56±20
P value	0.02	0.15	0.6	0.6	0.6	0.2	0.2	0.2	0.1	0.16	0.4	0.6	0.3
Long term	24±7	67±7	0.89±0.1	0.53±0.1	0.89±0.02	0.5±0.2	500±100	2.5±0.3	9.4±1.6	86±31	6.8±2.6	3.6±0.5	73±37
Non diabetes	15±5	61±18	0.81±0.2	0.69±0.5	0.80±0.1	0.46±0.1	760±500	2.1±0.3	12±1.7	100±33	7.9±5	4±0.4	63±31
Short term	5±1	60±16	0.79±0.1	0.6±0.1	0.88±0.01	0.43±0.1	650±180	2.3±0.3	11.5±1.2	110±35	5.6±1.9	4.4±0.5	74±47
P value	0.05	0.8	0.7	0.5	0.6	0.4	0.5	0.4	0.4	0.1	0.04	0.1	0.1
Long term	30±1	63±20	0.84±0.3	0.8±0.3	0.91±0.04	0.48±0.1	867±292	1.9±0.2	12.3±1.9	93±30	9.6±5.8	3.7±0.5	38±20

PET: Peritoneal equilibration test, PD: Peritoneal dialysis, ESR: Erythrocyte sedimentation rate. Data expressed as Mean±SD. Statistical analysis of data was done by Students *t* test. *P*>0.05 was considered significant

in our clinical context PD cannot prevent their catabolism process and after 24 months serum protein decrease in nondiabetes group.

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Nil.

**Conflicts of interest**

There are no conflicts of interest.

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