Peritoneal Equilibration Test: Time on Treatment and Reference Values

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Table 1. Mean PET measurements and differences between the two groups of patients with different times on treatment

Dear Sir,

We are using the peritoneal equilibration test (PET) with a 3.86% glucose solution [1] in peritoneal dialysis to evaluate and monitor peritoneal function and to optimize dialytic prescription. We are applying Twardowski's statistical method [2, 3] of classifying patients into four categories according to their PET results for solute peritoneal transport – D/P(4 h) – and ultrafiltration capacity, using the mean and standard deviation of the studied population. In our opinion this method is at present the only practical way to link test results to peritoneal dialysis prescription.

There were no doubts about interpreting results of a first cross-sectional study of our patients' peritoneal transport characteristics. However, after 1 year, patients from the first round repeated the test while many new patients did it for the first time, and so we found ourselves faced with an important methodological problem. It would seem that a criterion has not yet been established for choosing patients to obtain the population from which reference values can be calculated and consequently the intervals of each of the four categories [2, 3]. Do we consider the changes of the mean and standard deviation of our PET population by adding new first-PET patients or is the first year's classification the only valid one? How many patients are enough for this purpose? Do we consider time on treatment?

It is not acceptable to periodically recalculate category intervals in a sort of 'dynamic' classification every time new PETs are added to the list. But it is not useful for every center to consider only the first-year results for classification because of the small number of patients. Of course, it is an error considering repeated PETs for this classification.

We also feel that it is not completely correct in a cross-sectional study to include patients with just any length of time on treatment. In our opinion, usable data must refer to a population that can be considered 'normal' or 'basic', i.e. patients with a functionally intact peritoneum as far as peritoneal dialysis is concerned and consequently a reasonably short time on treatment.

With this aim in mind we carried out a one-way factorial Anova for solute transport rates [D/P(4 h) for creatinine, BUN, potassium, phosphorus and D/Do(4 h) for glucose] and ultrafiltration taken from 57 PETs performed between November 5, 1991 and April 7, 1993 in 37 patients (31 PETs from the first cross-sectional study, 20 PETs repeated after 1 year and 6 new first PETs) among six groups with different times on treatment (0-3, 3-6, 6-12, 12-24, 24-36, >

36 months). The only statistically significant difference was for creatinine D/P(4 h) between the second (3-6 months) and fourth (12-24 months) groups ($F = 3.0939$, $p = 0.0169$ with Scheffé test).

Then, to identify a temporal interval, satisfying conditions of peritoneal functional stability and feasibility to perform the test,

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we looked for any differences between the two groups with treatment times of less than 12 months (23 patients) and of 12 months or more (34 patients), using Student's t test for unpaired data. Creatinine and phosphorus rates were significantly different, while the mean values of all the other parameters were similar (table 1).

We felt therefore justified considering those patients on treatment for under 12 months as 'normal' or 'basic', and we calculated the category intervals using the PET results of these patients. We think however that such a time length is too long for practical use and a shorter interval would be better for baseline. Thus, in our opinion, these data should be confirmed by larger surveys, but we wish to stimulate discussion on this topic, which we feel is important to reach an agreement on reference values and a greater standardization of the PET. If we want the best results from this test performed in an increasing number of centers, it is not important to know the values of categories but to definitively assess classification criteria. This is probably why follow-up studies are so rare.

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