FROM THE EDITORS

Peritoneal Dialysis in the Management of Complex Disease

A year ago, this journal published an excellent review by Nakayama on the potential value of peritoneal dialysis (PD) in the management of refractory heart failure (1). That paper summarized 16 studies and patient series with endpoints that included functional status and hospitalization. This issue of *Peritoneal Dialysis International* adds two further studies to that literature. The first is a multicenter retrospective analysis from Italy (10 centers, 48 patients) reporting a reduction in hospitalization to a median of 11 days from 43 days per year with the use of PD, compared with the period before PD commencement (Silvio V. Bertoli *et al.*, pdi.2012.00290). The second is the largest study on this topic to be reported so far. In a confirmatory report from France, Cécile Courivaud *et al.* (pdi.2012.00149) describe 126 patients from two centers who experienced a similar reduction in hospitalization over a 15-year period (0.3 admissions per patient–month on therapy compared with 3.3 admissions for those not receiving PD) and an improvement in left ventricular ejection fraction. Those authors discuss the quality-of-life and health economic gains that would potentially accrue from the reduction in hospital admissions. Peritoneal dialysis in the management of heart failure is a difficult intervention to study for a range of reasons, including variability of patient selection and presentation, practicalities of establishing PD in severely compromised patients, and identification of the most appropriate outcome measures. However, an appropriately designed randomized controlled trial must be a priority.

If PD in heart failure were not a sufficient challenge for the modern nephrologist, Johann Morelle and Eric Goffin (pdi.2013.00302) summarize the results of a recent basic science report in experimental ischemic stroke published in the *Journal of Clinical Investigation*, in which PD commenced 2.5 – 5 hours after the insult led to a reduction in infarct size by a mechanism involving glutamate clearance (2). The pathogenesis of the phenomenon is fascinating and clearly deserves further attention. Although the link between cardiovascular disease and dialysis is widely recognized, the importance of stroke in patients on dialysis has not been given the profile it deserves given evidence of

its dramatically increased incidence at the time of dialysis initiation (3). The risk of both these complications for dialysis patients is influenced by coagulation profile, and a detailed study by Donald F. Brophy *et al.* (pdi.2013.00036) demonstrates a more prothrombotic profile, with increased platelet activity, in a group of patients on PD compared with a group on HD. The methodology used by the authors included complex studies of functional coagulation status, including measures of clot strength. They hypothesize that exposure to advanced glycation endproducts resulting from glucose-based dialysate might be involved.

Dialysis providers are rightly considering how to make the delivery of PD easier to patients who have complex medical conditions. An approach evaluated in this issue (by Judith Bernardini and Diane J. Davis, pdi.2012.00304) is the inclusion of a computerized training program with embedded animation, visual images, and voice guidance as part of the cyclor software. The 40 subjects who were identified for study (including Boston residents and automated PD patients) had a range of barriers to learning, including visual, hearing, or touch impairments. After 4 – 8 hours' training, all participants were able to meet the requirements of the education program. This result opens the possibility that interactive technologies might support patient training as part of a structured teaching plan within nurse–patient sessions.

Acute-start PD is gaining prominence in many locations. A large retrospective analysis of 657 patients conducted over a 10-year period at Renji Hospital in Shanghai examined the impact of the break-in period (the time between catheter insertion and start of PD) on mechanical problems. They found an increase in catheter dysfunction and malposition when PD was started fewer than 7 days after catheter insertion (compared with more than 14 days after); however, no impact on technique survival was observed after adjustment for relevant factors (Yaorong Liu *et al.* pdi.2012.00293). And Chun-Yu Kao and colleagues (pdi.2012.00130) describe a single-center experience of a one-port laparoscopic technique for PD catheter insertion, providing a number of excellent illustrations. The approach is similar to the approach using a peritoneoscope, but it has the potential for conversion to two-port laparoscopy if an intervention such as adhesiolysis is necessary. An unusual feature of

the technique is the creation of a subcutaneous tunnel to provide extraperitoneal fixation.

Residual peritoneal volume at the end of the dialysate drain can vary considerably between patients, generally as a consequence of catheter location and function, but it is rarely measured in practice. Alp Akonur and colleagues (pdi.2012.00175) mathematically modeled the impact on ultrafiltration of residual volumes ranging from 150 mL to 1200 mL for 2-L exchanges of 7.5% icodextrin and of 3.86% glucose, finding a reduction in ultrafiltration of 60% for icodextrin and 27% for glucose with the largest residual volume. The authors speculate that differences in residual volume could easily account for the variations in icodextrin-induced ultrafiltration that sometimes occur between patients.

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REFERENCES

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doi:10.3747/pdi.2014.00010