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COMMENTARY

PERITONEAL DIALYSIS, ACUTE KIDNEY INJURY, AND THE SAVING YOUNG LIVES PROGRAM

The role of peritoneal dialysis (PD) in managing patients with acute kidney injury (AKI) is being redefined (1). Although PD had been routinely used to treat patients with AKI throughout the world in the 1970s and 80s, extracorporeal blood therapies (ECBT) became the standard of care in the developed world by the 1990s. Peritoneal dialysis, however, continued to be used in low resource settings even though its use was, to some extent, called into question by the randomized trial from Vietnam published in the *New England Journal of Medicine* in 2002 (2). This study suggested a higher mortality rate for patients with AKI treated with PD compared to hemofiltration; the obvious problems with this study have been discussed previously (3).

In the last few years, the use of PD to treat patients with AKI has been reevaluated for several reasons. First, the studies from Sao Paulo, Brazil, have clearly shown that high-dose PD using large volumes of dialysate and automated cycler delivery systems provides outcomes that are comparable to those achieved with daily hemodialysis (HD) in AKI patients, including those who are critically ill with high APACHE scores (4,5). Second, recent detailed reviews of the use of PD for AKI have commented on the similar results with PD compared to ECBT and have defined the optimal dose of PD that should be used to treat patients with AKI (3,6). Third, PD is now being used more commonly for patients needing to start chronic dialysis urgently, and a robust experience is emerging on optimal methods of catheter placement and practical strategies to permit early use of PD catheters (7). And, lastly, studies from the developing world are now demonstrating that PD provides acceptable outcomes for patients with AKI (8).

In this issue of Peritoneal Dialysis International, two new important papers are published that extend these observations and further our understanding of the role of PD to treat AKI patients (9,10). Abdelraheem *et al.* review their experience at a specialized pediatric dialysis facility at Soba Hospital in Khartoum, Sudan, of 343 children with AKI receiving PD therapy (9). Nephrologists in the Sudan are a well organized community with several years' experience with PD therapy (11). Children from around the country were referred to Soba Hospital for care. But, it is clear that the further one moved from Khartoum, the lower the number of referrals, suggesting that children with AKI in more remote regions are not being referred, perhaps due to the logistics of triage or because a diagnosis of AKI is not made. And, Esezobor *et al.* from Lagos, Nigeria, review their experience with PD to treat AKI in children at a public hospital in Lagos (10). Because cost issues were critically important here (patients had to pay for their care, as not uncommonly occurs in developing countries), the authors often improvised in terms of solutions, catheters, and equipment used. Mortality rates were similar in these studies to rates described in other reports of between 20 and 50% with the use of PD to treat AKI patients in low resource settings. But, what clearly is emphasized by these two papers is that PD can effectively be used to treat children with AKI in low resource settings and save lives. The provision of adequate supplies is critically important to facilitate the treatment. And, identifying and referring patients to hospitals that have the ability (supplies and trained individuals) to perform dialysis is challenging. The Nigerian group's experience underscores the importance of international organizations in providing support (financial and educational) for training physicians to develop PD programs.

The Saving Young Lives (SYL) project was started in September 2012 with a generous grant from the Recanati-Kaplan Foundation. The project has been managed cooperatively by the International Society of Nephrology (ISN), the International Society of Peritoneal Dialysis (ISPD), the International Pediatric Nephrology Association (IPNA), and the Sustainable Kidney Care Foundation (SKCF). The first 3 organizations provide the training and educational support for physicians

and nurses in low resource settings to develop and grow sustainable programs to treat patients with AKI and plan the use of PD for those who need dialytic therapy. The support provided consists of organizing local continuing medical education programs and arranging 2- to 12-month-long fellowship training for individuals to work at well-established PD centers. It also provides funding for individuals well versed in PD therapy to spend 1 to 4 weeks at selected sites to work with individuals to initiate, assess, and expand treatment programs for AKI. The SKCF provides supplies to initiate PD programs to treat AKI (not end-stage renal disease) patients, developing with each institution a signed agreement through which the institution commits to providing supplies in the future to permit the program to be sustainable after 2 to 3 years of support.

The SYL consortium has, thus far, helped develop programs in Tanzania, Benin, Cameroon, and two sites in Ghana and has signed memoranda of understanding to initiate programs in Cambodia, Ethiopia, Uganda, and Ivory Coast. It is very clear that the programs save lives; without the support from SYL at these centers, patients with AKI who need dialytic support would die. Our experience has been very similar to that reported by Abdelraheem and Esezobor—survival rates are high and complications relatively few. But, the 2 papers in this issue of *Peritoneal Dialysis International* also underscore some of the obstacles in organizing such programs. Informing and creating awareness in the community and region of the importance of identifying and referring patients with AKI is challenging. There needs to be appropriate education for the staff of community health centers and provision of resources (such as point of care urea or creatinine testing) necessary to make a diagnosis of AKI. Referrals need to be encouraged – well illustrated by the geographic origin of patients treated in the Sudan study. And, provision of adequate supplies at low cost is of major importance in providing good care and reducing the complications of PD therapy—well illustrated in the Nigerian study.

The SYL Program is continuing to look for other centers, physicians, and regions that are interested in initiating PD programs to treat AKI patients, focusing on young adults and children. We have worked closely with and are thankful for the generosity of several centers all around the world who have provided training in the basic principles of PD, catheter placement, and general approaches to the diagnosis and treatment of patients with AKI.

As the ISN develops and expands its "0 by 25" project (focusing attention on all aspects of AKI), the SYL Program hopes to expand its initiatives to enable technically simple treatments to be available for those patients with AKI requiring dialytic support throughout the world.

DISCLOSURES

The authors have no financial conflicts of interest to declare.

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REFERENCES

1. Yeates K, Cruz DN, Finkelstein FO. Re-examination of the role of peritoneal dialysis to treat patients with acute kidney injury. *Perit Dial Int* 2012; 32:238–41.
2. Phu NH, Hien TT, Mai NT, Chau TT, Chuong LV, Loc PP, *et al*. Hemofiltration and peritoneal dialysis in infection-associated acute renal failure in Vietnam. *N Engl J Med* 2002; 347:895–902.
3. Chionh CY, Soni SS, Finkelstein FO, Ronco C, Cruz DN. Use of peritoneal dialysis in AKI: a systematic review. *Clin J Am Soc Nephrol* 2013; 8:1649–60.
4. Ponce D, Berbel MN, Abrão JM, Goes CR, Balbi AL. A randomized clinical trial of high volume peritoneal dialysis versus extended daily hemodialysis for acute kidney injury patients. *Int Urol Nephrol* 2013 Jun; 45(3):869–78.
5. Ponce D, Berbel MN, Regina de Goes C, Almeida CT, Balbi AL. High-volume peritoneal dialysis in acute kidney injury: indications and limitations. *Clin J Am Soc Nephrol* 2012; 7:887–94.
6. Chionh CY, Ronco C, Finkelstein FO, Soni SS, Cruz DN. Acute peritoneal dialysis: what is the "adequate" dose for acute kidney injury? *Nephrol Dial Trans* 2010; 25:3155–60.
7. Ghaffari A. Urgent-start peritoneal dialysis: a quality improvement report. *Am J Kidney Dis* 2012; 59:400–8.

8. Kilonzo KG, Ghosh S, Temu SA, Maro V, Callegari J, Carter M, *et al*. Outcome of acute peritoneal dialysis in northern Tanzania. *Perit Dial Int* 2012; 32:261–6.
9. Abdelraheem M, Ali E, Osman R, Ellidir R, Bushara A, Hussein R, *et al*. Outcome of acute kidney injury in Sudanese children; an experience from a sub-saharan african unit. *Perit Dial Int* 2014; 34:526–33.
10. Esezobor C, Ladago T, Lesi F. Peritoneal dialysis for children with acute kidney injury in Lagos, Nigeria: experience with adaptations. *Perit Dial Int* 2014; 534–8.
11. Elhassan EA, Kaballo B, Fedail H, Abdelraheem MB, Ali T, Medani S, *et al*. Periotneal dialysis in the Sudan. *Perit Dial Int* 2007; 27:503–10.

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