Truly Urgent "Urgent-Start" Peritoneal Dialysis

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Urgent-start peritoneal dialysis (PD) is increasingly recognized as a viable strategy for treating patients with advanced chronic kidney disease with unexpected deterioration in their kidney function.[1,2] There are many factors associated with this trend, including cost savings, reduced risk of vascular access complications, and the potential to grow home dialysis programs. The coronavirus disease 2019 pandemic has further emphasized advantages of this strategy. Starting more dialysis patients at home can help reduce overcrowding in hemodialysis units and decreases potential patient exposure to coronavirus disease 2019.

One of the challenges with urgent-start PD is that it is associated with more peri-catheter leaks, as earlier catheter use gives abdominal wall tissues less time to heal. This typically leads to a delay in treatment with PD or a switch to hemodialysis and can also increase the risk of catheter-associated infections. The article by Hernández-Castillo et al.[3] in this issue of KI

Reports demonstrates that in a large cohort of more than 100 patients in a single center in Mexico, very early urgent-start PD, mostly within 24 hours of catheter insertion, is associated with only a 7.8% rate of leaks. Several previous urgent-start PD studies have reported peri-catheter leaks ranging from 2% to 33%, depending on the catheter break-in time, insertion technique, fill volumes, and strategies to secure the deep cuff.[1,2,4,5] The relatively low rate in this Mexican study is impressive considering the very short break-in time and the quite high fill volumes, mostly 2 liters, initially used. In other urgent-start PD cohorts, the patients were given an incremental prescription with low fill volumes to reduce this risk, as described by Povlsen et al.[6] High fill volumes within 24 hours had been described by Song et al.,[7] with a leak rate of 10.5%, but the study population comprised only 38 patients.

Before further discussing these results and how they might apply elsewhere, it is important to consider the context. Mexico has long had a very high rate of PD utilization in its end-stage kidney disease population; however, the center from which this report comes does not have its own

chronic PD program nor does it provide easy access to urgent hemodialysis, although 5 patients did eventually receive that treatment. The patient population described in the paper apparently had no previous preparation for dialysis and presented extremely late with a mean serum creatinine of 15 mg/dl and a mean serum bicarbonate of only 10.6 mEq/l. This was clearly a challenging population that required a very urgent-start on dialysis, and it explains the early use of 2-liter dwell volumes in more than two-thirds of patients. The fact that the 102 reported cases included 6 with preexisting abdominal hernias suggests that urgent-start hemodialysis was indeed not an easily available option. Because more than 70% of the cohort had diabetes, a risk factor for leaks in many studies, along with the immediate use of high fill volumes, the relatively low leak rate is even more impressive. A recent comparable study by Wojtaszek et al.[8] of 35 patients from Poland with average catheter use within 3.5 days of insertion had a peri-catheter leak rate of 11%. This Polish population was on average 5 years younger (51 vs. 56 years) and had much less diabetes (11% vs. 72%) than those in the present study, supporting the impression that the surgeons for this Mexican cohort had good outcomes.

Although Hernández-Castillo et al.[3] report a low rate of peri-catheter leaks, the study only detected early complications, because once urgent-start PD was initiated, the patients were transferred for further management to centers with chronic PD programs. It is possible that some of these leaks persisted and that subsequent additional leaks became

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apparent once the patient became ambulatory, as sitting and standing increases intra-abdominal pressures. The lack of long-term follow-up for this population makes the overall results challenging to interpret. Although the initial results appear to be positive, the lack of long-term outcomes on late complications, such as leaks, peritonitis events, technique failure, and death, make it difficult to know if these patients were able to be sustained on PD. It would also have been informative for the authors to include details on the surgical insertion technique. The risk of leaks may be reduced by insertion practices such as burying the deep cuff into the rectus muscle or applying a purse-string suture on the anterior rectus sheath. Use of these techniques might explain the low leak rates reported.

Less impressive is the relatively high 14% rate of early peritonitis in this study. One obvious contributing factor to this is the inconsistent use of prophylactic antibiotics, an evidence-based recommendation for all PD catheter insertions. This finding stands in contrast to studies that had higher leak rates, but lower infection rates. The need for catheter repositioning was relatively high at just over 20%, but overall only 6 patients required catheter removal.

Urgent-start PD has recently become popular in North America but it needs to be noted that it often involves a longer break-in period than reported in this and other studies from Brazil, Denmark, and Poland.[1,2,5–7] It is useful, as we have previously proposed, to subdivide urgent-start PD into truly "urgent-start" cases in which PD is initiated within 72 hours of catheter insertion, and less urgent ones in which the break-in period is between 3 and 14 days, which we have termed "early start PD."[9] In "early start" PD, the whole process may be carried out without hospital admission and patients may be well enough to receive PD training in association with the early use of the catheter. An initial incremental approach with supine automated PD and low dwell volumes may be feasible, and risks of leak and other complications should be correspondingly less. In true urgent-start PD, however, the patient is unwell, due to either overt uremia or fluid overload, and hospitalization for immediate initiation of PD will typically be required. Training of the patient will have to come later and may delay discharge or require daily visits to the PD unit for treatment plus training and be quite stressful for the patient and family. Complications may be more likely and back-up urgent-start hemodialysis will sometimes be required. Distinguishing these 2 conceptually distinct varieties of early PD use allow for fairer comparison of outcomes when evaluating the literature.

In summary, this article demonstrates that patients with severe uremia can be started immediately on full-volume PD with acceptable levels of complications. Few patients needed to switch to hemodialysis or undergo a second procedure for catheter repositioning. Experience has shown that patients who may want PD but who start on hemodialysis are more likely to remain on hemodialysis, and so these findings are important. This is especially so in the current global health climate when home dialysis modalities may be preferred to protect scarce health care resources and to minimize the risk of transmitting communicable diseases.

DISCLOSURE

All the authors declared no competing interests.

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