Vascular Care of ESRD Patients

Is enough being done to improve the outcomes for chronic kidney disease patients?

BY FELICIA B. RICKS, RD, CSR, LD; AND ERIC K. PEDEN, MD

It has been more than 35 years since the Medicare program for end-stage renal disease (ESRD) made hemodialysis widely available in the US. Currently, nearly all patients with late-stage chronic kidney disease (CKD) who require regular intervention for continuation of life have access to treatment within a reasonable distance from their home or workplace. Continuous clinical improvements have also rapidly developed. Veterans of the early days of dialysis witnessed the use of behemoth dialyzers (bearing a remarkable resemblance to open-top washing machines) and the use of formaldehyde as dialysate. This is a far cry from today's super-efficient, highly biocompatible systems. Certainly, quality of life has improved immeasurably as well. Erythropoiesis-stimulating agents and vitamin D supplementation are now the norm, virtually eliminating the bone-wearying anemia and skeletal pain that was once accepted as part of the disease process. Additionally, the arteriovenous fistula has solidly stood the test of time as the gold standard for dialysis access. But even with all of this progress, have we done enough to improve our techniques?

In 2004, the total Medicare cost for ESRD care exceeded $18 billion, with approximately $6.7 billion of it related to inpatient, nondialysis charges.[1] Furthermore, the number of patients requiring some form of renal replacement therapy is expected to reach 600,000 over the next 12 to 18 months. With the annual cost to taxpayers exceeding $7 billion annually toward dialysis alone, good stewardship dictates holistic management of CKD patients and a continuous effort to improve care. In 1997, the National Kidney Foundation published the most comprehensive effort of that time, the Dialysis Outcomes Quality Initiative, to guide and propel thinking about care for the dialysis population. In the decade since its inaugural edition, the initiative has seen many changes and additions. The guidelines that make up the Kidney Disease Outcomes Quality Initiative, as it is now named, seek to address all known and foreseeable aspects of care, from early diagnosis and management of comorbid conditions, to total renal replacement. It is well known that atherosclerotic disease is worsened by uremia and that poor outcomes in the dialysis patient are far greater than in the general population. However, the guidelines that pertain most to the leading cause of morbidity and mortality in kidney disease (namely, cardio- and cerebrovascular and peripheral vascular diseases/events) are based almost entirely on observation. All of the published studies reviewed during the preparation of the 2006 edition of the guidelines (the latest edition published) were retrospective analyses. At the time, there were no prospective randomized controlled trials in dialysis patients comparing the treatments most commonly used in the general population to treat coronary artery disease.

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DIALYSIS OUTCOMES AND PRACTICE PATTERNS STUDY

The Dialysis Outcomes and Practice Patterns Study has done much to highlight the opportunities for improvement in our care of the ESRD population. Among them is evidence for the avoidance of catheter use to decrease the incidence of access-related complications, especially infection, which is the second leading cause of morbidity and mortality in ESRD. Furthermore, as our patients live longer, conservation of their vasculature is imperative, because we do not want to lose their last access due to an inexcusable case of poor planning.

The study also demonstrated the benefit of predialysis care. Those who received care for more than 4 months

before initiation were most likely to begin dialysis with a native arteriovenous fistula. These patients tend to recover faster from access surgery and adjust to dialysis with relative ease. However, we have also seen patients who do not benefit. They are sick, weary to the point of exhaustion, and anemic, even months after beginning dialysis. We know observationally and objectively that early, frequent, multidisciplinary intervention yields the best outcomes for our patients. That being said, why is it that so many patients still present to emergency rooms with no concept of their renal status and then begin dialysis with a catheter after a long hospitalization?

THE DIALYSIS CARE TEAM

It takes a very large and diverse team to care for a dialysis patient. Although gallant attempts and much valuable progress have been made, no single discipline can fill all the needs of this highly complicated patient population. Community outreach and education programs that focus exclusively on dialysis patients and their families (those at highest risk for kidney disease) warrant a large portion of private and public sector healthcare funding. Although initially expensive, only through prospective prevention will the future cost of care for CKD be controlled. With this population growing at an estimated 5% per year, we must start at the beginning with family practitioners and primary care physicians, as well as timely involvement of experts in endocrinology, nephrology, vascular surgery, cardiology, nutrition, and the nuances of coping with chronic illness. Collaboration, continuing education, and fluid communication are essential to improving the understanding of the disease process and its myriad of complications, thereby ensuring proactive patient care.

The path for a dialysis patient is a difficult one. The burden on the patient's time, as well as the family's time, is substantial. This has led to a surge in the use of ambulance services, a large percentage of which fall outside the Centers for Medicare & Medicaid Services guidelines for reimbursement. Is this the fault of the patients and facilities? The patients often have serious comorbidities, are increasingly aged, and must attend dialysis three times per week. Once at the facility, the dialysis process itself is stressful, involving the removal of 5% to 10% of body weight in fluid over the span of 3 to 4 hours before discharge and the return to usual activities at home. Sudden, drastic drops in blood pressure are not uncommon in the immediate posttreatment period; therefore, many patients (and their families) are uncomfortable transporting themselves, resulting in yet even higher costs.

OBTAINING ACCESS

Although completely necessary, the prospect of obtaining a dialysis access is a daunting one. Patients, especially those new to the process, observe that those around them have endured many access attempts and even amputations. From the start, an access can be disfiguring, often has poor outcomes, and almost always requires a succession of procedures. Clearly, this population needs some sort of lifeline to connect to the life-sustaining treatment of dialysis, but it comes at a dear cost. Even though the autogenous fistula is considered the gold standard for dialysis access, it is far from perfect. In a recently published study on the effect of clopidogrel on fistula outcomes, 60% of fistulae failed to mature to the point of being usable for dialysis.

This disheartening figure comes from some of the most famed medical institutions in the country. Counseling for access options becomes a shameful admission to the patient about a high propensity for poor outcomes and the fact that the options are limited to a list of poor choices. The procedures required to maintain or restore function of the access can easily frustrate the patient. Thrombectomy and angioplasty procedures carry a goal of achieving 50% patency at 3 months. That equates to a high number of procedures over the patient's lifetime.

Unfortunately, limb loss is exceptionally high among the dialysis population. It has been reported that dialysis patients are more than 10 times as likely as their age- and disease-matched cohorts to require amputation. Even more dismal is that in the same study, two thirds of the patients died within 2 years of the first amputation.[2] Diabetic foot wounds that require procedures such as revascularization and/or amputation greatly accelerate in the first year of dialysis. Outcomes remain poor, with many patients ultimately losing a limb, despite a functioning bypass. This leads to recommendations for the patient to consider amputation rather than surgical revascularization for those with advanced tissue loss. Reconstructive surgeons have noted a strong trend toward failed free flaps in dialysis patients, causing many plastic surgeons to withhold these advanced techniques from dialysis patients. Furthermore, poor outcomes have led most industry partners to exclude dialysis patients from trials involving lower extremity arterial studies, ranging from angioplasties to bypasses, to novel treatments such as stem cell injections. These findings all point to a huge problem in this patient population that has yet to be solved.

In our vascular practice, although the process is still far from perfect, we strive to obtain the most comprehensive assessment of every patient's health status and provide improvement whenever the opportunity presents. To this end, we ask about tobacco use and counsel cessation extensively. We look at feet and legs, even when the patient was referred for an upper extremity dialysis access. We have added a dialysis coordinator to the team, whose mission is to serve as a comprehensive resource for our patients with CKD. In her many years as a renal dietitian, and later, run-

ning a dialysis facility, our dialysis coordinator has a great deal of experience and education, which is a huge assurance to our patients and their families. For example, her specialized knowledge of the vascular effect of uncontrolled calcium, phosphorus, and fluid, has increased the depth of our assessments, patient/family education, and care planning.

CONCLUSION

Even still, is what we are doing enough? That is not an easy question to answer. The variable of the noncompliant patient looms largely on the horizon of even the most effective and successful programs. Funding issues and gaps in follow-up are among a million factors that thwart the best intentions. So where do we go from here? It is clear that dialysis is not the most desirable solution. Prevention, proactive kidney care, and indefinite delay of dialysis would, without doubt, be the best option. For those that are on dialysis, a broader acceptance and practice of the Kidney Disease Outcomes Quality Initiative guidelines, along with further investigation and research, are critical to improving outcomes. Further research is needed in many areas, including vascular calcification, the mechanisms behind accelerated cardiovascular disease, and improving access outcomes. This fragile patient population is depending on the medical community to continue to strive for improvement. ■

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2. Eggers PW, Gohdes D, Pugh J. Nontraumatic lower extremity amputations in the Medicare end-stage renal disease population. Kidney Int. 1999;56:1524–1533.