MEDICAL HISTORY

This patient is a 34-year-old African American man with ESRD. He developed ESRD in 1992 secondary to idiopathic focal glomerulosclerosis. He received a renal transplant in 1993, which failed in 1997 due to a combination of chronic transplant glomerulopathy and the recurrence of focal glomerulosclerosis. After this second renal failure, he started continuous ambulatory peritoneal dialysis, which worked well for 6 or 7 years, until he developed recurrent peritonitis in 2003, and his catheter was removed. Hemodialysis was initiated with a tunneled hemodialysis catheter. An arteriovenous fistula was created, and he now receives hemodialysis 3 times per week. The patient is compliant with his hemodialysis regimen.

REVIEW OF SYSTEMS

The patient feels good, with a negative review of systems except for erectile dysfunction.

FAMILY AND SOCIAL HISTORY

The patient has no significant family history of kidney disease or CVD. He does not have diabetes mellitus, nor does he smoke or drink. He works as a personal trainer, so he is in excellent physical condition. However, he is not abnormally muscular, and there is no evidence of steroid use. His only medication is the phosphorous binder calcium acetate, which is taken at each meal.

PHYSICAL EXAMINATION

The patient is a muscular young man with heart rate of 70 beats per minute, and his blood pressure is relatively low, at 98/70 mm Hg. Examination of heart and lungs is within normal limits. Abdominal examination is unremarkable. He has right lower quadrant transplant kidney. He has a well functioning left upper arm arteriovenous fistula and does not have peripheral edema.

LABORATORY STUDIES

The patient’s serum sodium, potassium, and calcium levels are normal and have been stable. He does not have metabolic acidosis, and his creatinine level is normal. His parathyroid hormone levels are slightly elevated, for which he receives vitamin D as needed. His lipid profile is normal.

Last year, he underwent exercise stress echocardiographic testing due to concerns with hypotension. He had no evidence of ischemia, but his ejection fraction was suppressed to about 40%. The ejection fraction decreased further, with stress and global hypokinesis evident as well.

OUTPATIENT COURSE

The patient has recently become aware of incompatible donor transplantation, and one of his friends has shown willingness to donate a kidney. He is currently being evaluated for such a transplant.

COMMENTARY

Unfortunately, young, otherwise healthy patients with kidney disease develop CVD. A study that stratified the risk of cardiovascular mortality by age in patients with CKD showed that patients with ESRD who are aged 25 to 34 years are at least 100 times more...
CASE STUDY

likely to die of a cardiovascular event than a person without ESRD (Figure 1). This increased risk is further underscored by the very short life expectancy of dialysis patients who are aged 25 to 29 years. Figure 2 shows a United States Renal Data System analysis suggesting that life expectancy for this demographic is perhaps 10 years, compared with 50 years for the general population.

For young and older patients with ESRD, the risk of mortality from cardiovascular events is greatly increased. Examples of young, relatively healthy patients with CKD who develop significant CVD in the absence of many traditional and nontraditional risk factors suggest that CVD is accelerated in the presence of CKD and that its development is independent of many obvious risk factors. The development of CVD in the absence of risk factors begs the question of how to provide cardioprotective treatments to patients with CKD. Cases such as the one presented here may also provide some insight into the etiology of the CVD associated with CKD. CVD emergence and progression in the absence of an obvious mechanism suggests that these diseases have a systemic effect on one another. Perhaps this added impact is due to erythropoietin deficiency, chronic inflammation, abnormal calcium-phosphorus metabolism, or unknown uremic toxins. Although it is not possible to effectively treat all of the known risk factors with currently available therapies, measures to correct modifiable risk factors may affect the increased morbidity and mortality of this population. What is certain, at present, is that the cardiovascular system cannot cope with the long-term stresses of CKD.

REFERENCES
