Consider Fetal Risk When Managing Kidney Disease

ARTICLES BY SARAH PRESSMAN LOVINGER
Contributing Writer

CHICAGO — Tight blood pressure control is crucial in caring for pregnant women with diabetic nephropathy, but medication management must factor in potential fetal risks, Dr. Phyllis August said at a meeting on clinical nephrology sponsored by the National Kidney Foundation.

In reviewing the management strategies for pregnant women with pre-existing diabetic nephropathy and lupus nephropathy, she noted that the most effective management begins even before conception. Yet even though preconception counseling can improve outcomes, physicians typically care for gravid women who already have significant disease.

"Overall, the outcome in pregnancy is related to the baseline blood pressure and level of renal function at the beginning of pregnancy," said Dr. August, professor of medicine at the Weill Medical College of Cornell University, New York.

ACEIs and ARBs are vital in diabetic nephropathy, but as soon as a woman misses her period, she should be switched to a safer agent for the fetus.

ACE inhibitors and angiotensin-receptor blockers (ARBs) are vital in treating diabetic nephropathy in women who are trying to conceive, but these agents are potentially harmful to the developing fetus, she noted.

To derive the maximal benefit from these medications, Dr. August suggesting switching to a safer agent (such as methyldopa or labetalol) as soon as a patient misses her menstrual period. "The overwhelming evidence for the adverse effects of ACE inhibitors and ARBs relates to second and third trimester exposure," she said.

Dr. August also recommended performing a cardiac evaluation before conception in women with long-standing type 1 diabetes.

"Significant renal disease is associated with preeclampsia and renal complications," she noted. Chronic kidney disease also increases the risk of intrauterine growth retardation and preterm birth.

In the past, women with diabetic nephropathy tended to have a high rate of maternal complications, including overt nephropathy, hypertension, and death due to unrecognized coronary artery disease.

But outcomes for pregnant women with diabetic nephropathy have improved. One study detected no difference in the rate of decline in renal function between a group of women with diabetic nephropathy who became pregnant and another that did not.

Lupus nephropathy can be challenging for patients and physicians, Dr. August noted. "There is a poor outcome when the disease is active at conception," she said. A high percentage of patients—as many as 50%-80%—will experience a disease flare during pregnancy if they have active disease at conception. On the other hand, only 10%-40% of women who are in remission at conception will have a flare.

Azathioprine can be safely used to treat pregnant women with lupus nephritis. Dr. August also advocated delivery during the third trimester in gravid women whose lupus nephritis is deteriorating quickly. The mother's condition often improves quickly after delivery.

Women with lupus and antiphospholipid antibody syndrome are also at higher risk of fetal loss, arterial and venous thrombosis, renal vasculitis, and preeclampsia. Women with this syndrome may benefit from taking low-molecular-weight heparin, with or without aspirin.

Although the outlook has improved for women with certain types of chronic kidney disease who wish to bear children, the chance of a good pregnancy outcome in women with end-stage renal disease on dialysis remains poor.

Women on dialysis who get pregnant have a high incidence of adverse outcomes such as second trimester pregnancy loss, prematurity, and congenital abnormalities. For these women, attempted pregnancy "should never be encouraged," Dr. August said. ■

New Technology Makes Home Dialysis an Easier Option

CHICAGO — New hemodialysis technology is making it easier for more patients to receive this treatment at home, rather than using already burdened dialysis centers.

Although very few patients currently use in-home hemodialysis, those who have been able to take advantage of the newer systems prefer this option, according to Dr. Michael A. Kraus. "The patients' acceptance is huge," he said at a meeting on clinical nephrology sponsored by the National Kidney Foundation.

Having dialysis at home offers many advantages, included improved quality of life, greater patient satisfaction, and lower costs than the traditional approach of three dialysis treatments per week given in a dialysis center.

In-center dialysis patients not only experience poor quality of life, but the treatment is very expensive. The centers must be staffed by nurses and technicians, and the cost of transporting patients to dialysis centers adds considerably to the overall expense.

Dr. Kraus, a nephrologist at Indiana University, Indianapolis, noted that because of in-center dialysis costs, 6.6% of the Medicare budget is spent for 0.1% of patients. In addition, the current shortage of dialysis nurses and technicians will only worsen as the dialysis population increases.

Although in-center dialysis leads to about 7 hours of postdialysis fatigue, inflexible schedules, and the need for drug regimens including multiple drugs, almost all patients rely on this method of dialysis. "Virtually no one does dialysis at home," Dr. Kraus said.

New technology may offer more people the chance to have hemodialysis at home in the future, which can eliminate the cost of transportation and lower overall nursing costs, because patients rely on a family member to assist with the procedure.

Dr. Kraus explained how the newest in-home dialysis systems available differ from one another. The Aksys PHD (personal hemodialysis) System, the first system approved by the Food and Drug Administration for home dialysis, includes a sterilization mechanism that allows patients to reuse all the plastic elements for 1 week. This minimizes storage requirements. The more widely used system, the NxStage System One, uses sterile fluid that comes in bags, so patients do not need to supply additional water. This smaller system is portable, allowing users to travel. This newest system approved by the FDA includes a self-contained unit that generates enough dialysate for 2-3 days.

To evaluate the efficacy and utility of home dialysis, Dr. Kraus conducted a multicenter study of 32 patients who had hemodialysis at home 6 days/week for about 2.5 hours/session. Blood pressure readings declined, and the use of antihypertensive medication declined. Patients also reported increased satisfaction. "Our patients love the therapy," said Dr. Kraus, who has conducted research on the NxStage System One and is an advisor to the company.

Although there are no recent studies comparing mortality of patients who use in-home vs. in-center dialysis, older studies did show a nonsignificant improvement in mortality, he said.

Dr. Kraus noted other benefits from home dialysis. "We see a marked improvement in blood pressure. Anemia tends to improve." An NIH study of short daily in-home dialysis, compared with the standard method should shed more light on potential benefits.

In-home dialysis may also offer an economic benefit for society, Dr. Kraus noted. With the flexibility it provides and the improved quality of life, many end-stage renal disease patients are able to resume working. This could decrease government expenditures for end-stage renal disease patients. "If we can get patients back to work, we can get them off the Medicaid rolls."

As in-home dialysis becomes more readily available, Dr. Kraus sees an important advantage: "In the future, it will be by far the cheapest treatment available," he predicted. ■

Nocturnal Hypertension Explored as Risk Factor for Nephropathy

CHICAGO — With the goal of preventing renal complications in type 1 diabetics, nephrologists have begun to focus on subtle increases in nighttime blood pressure as a risk factor for the development of overt nephropathy.

"It is a concept we are pioneering, a very promising approach," Dr. Daniel Batlle said at a meeting on clinical nephrology sponsored by the National Kidney Foundation.

In a prospective study, he and his associates followed 75 young type 1 diabetics without microalbuminuria at baseline for 5 years. After 2 years, none of the subjects had developed any urinary protein, but 18% of the subjects went on to develop microalbuminuria. In those who developed microalbuminuria, the mean systolic pressure during sleep increased significantly (from 109.9 to 114.9 mm Hg). This group had elevated systolic blood pressure only at night (Kidney Int. 2003;63:2319-30).

This line of research is a departure from the classic reasoning that blood pressure does not start to increase until overt proteinuria occurs in diabetics, noted Dr. Batlle, chairman of the nephrology department at Northwestern University, Chicago.

No specific treatments for mild nocturnal hypertension have been developed, but a 5-year National Institutes of Health study of 300-400 patients should shed more light on the importance of nocturnal hypertension in diabetics, said Dr. Batlle, the study's principal investigator. "Systolic [hypertension] seems to be a more powerful predictor that diastolic," he added.

Nephrologists have long considered microalbuminuria to be the best marker for predicting progression of renal disease, but more recent studies have shown that the cumulative incidence of overt nephropathy in patients with type 1 diabetes and microalbuminuria is only about 25%. "So obviously, microalbuminuria is not as good a predictor as we thought," he explained.

In addition to microalbuminuria, researchers also have considered histology and genetics in the search for a marker for an increased risk of nephropathy. Renal biopsies of 170 type 1 diabetics with albuminuria that regressed in some patients but progressed in others revealed that a wider glomerular basement membrane could lead to the development of proteinuria (Diabetes 2005; 54:2164-71). Researchers have not yet shed light on the genetic nature of proteinuria. "We don't have a good genetic marker," Dr. Batlle said.

A family history of nephropathy confers the greatest risk of the subsequent development of microalbuminuria. Other clinical risk factors for progression include poor diabetes control, an increase in urinary albumin excretion that is still within the normoalbuminuria range, and hyperfiltration. ■