

# CKD in Pregnancy Poses Maternal, Fetal Risks

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Senior Writer

WASHINGTON — Kidney disease can lead to complications during pregnancy—and pregnancy can worsen kidney disease, Phyllis August, M.D., said at a meeting sponsored by the National Kidney Foundation.

“Without normal renal function, pregnancy is threatened and not always successful, and pregnancy does pose a burden in women with compromised renal function,” said Dr. August, professor of medicine at the Cornell University cardiovascular center in New York.

During pregnancy, women undergo kidney and hemodynamic changes that can lead to or worsen chronic kidney disease (CKD). “The bottom line in patients with CKD or chronic renal insufficiency is that the outcome seems to be related to baseline blood pressure and the degree of renal insufficiency at the time of conception,” she said. In general, serum creatinine levels lower than 1.5 mg/dL and the absence of hypertension favor normal outcomes.

The approach to management depends on whether the patient is diagnosed with renal disease before conception or during pregnancy, or whether the disease onset occurs during pregnancy.

Encourage patients with severe CKD to wait until they have had a transplant before becoming pregnant. “Dialysis and pregnancy are not a good combination,” Dr. August said.

Pregnancy has temporary effects on renal disease. Urinary protein excretion is increased, with normal excretion ranging

up to 300 mg/day during pregnancy. “Many of our patients with chronic renal disease, particularly diabetic nephropathy, can have a significant increase in urinary protein excretion,” she said. It’s unknown whether this increase has any adverse effects on the underlying kidney disease.

“There is the possibility that because of all of these phenomena that pregnancy could pose a burden on the kidney in women with preexisting renal disease, leading to permanent loss of function,” Dr. August said. But there are few data on the long-term effect of pregnancy on renal function in women with CKD.

Renal disease diagnosed before conception is typically diabetic nephropathy or chronic glomerular nephritis. Previous studies suggested that earlier deliveries and smaller babies were the rule in this population. More recent data suggest that the worse the renal disease is prior to pregnancy, the worse the outcome of the pregnancy will be. Some data suggest that pregnancy does not lead to progression of diabetic nephropathy.

Management of diabetic nephropathy during pregnancy should rely on tight control of blood sugar, especially during the first trimester. There is a clear association between abnormal glucose control and fetal malformations. Also discontinue the use of ACE inhibitors and angiotensin II receptor blockers. Instead, antihypertensive therapy should be accomplished with methyldopa, labetalol, calcium antagonists, and occasional use of diuretics, Dr. August advised.

Women with a long history of type 1 diabetes should have a thorough cardiac evaluation with a stress test and an

echocardiogram prior to pregnancy. Once pregnant, these patients should have a laboratory evaluation about every month, she recommended.

Many women with CKD have a risk of developing superimposed preeclampsia. The higher a woman’s creatinine level is, the greater the risk. Pregnant women with preexisting CKD and preeclampsia have a higher incidence of premature delivery and restricted fetus growth than do women without CKD. “Most women with renal disease will have premature deliveries, and many will have smaller babies,” Dr. August said.

In some cases, renal disease becomes clinically apparent for the first time during pregnancy. Increased renal hemodynamics during pregnancy can unmask proteinuria. Close monitoring of blood pressure and urine during pregnancy may bring problems to light.

Renal evaluation of patients first suspected of having CKD during pregnancy is similar to that for patients who are not pregnant—serologic and function testing, and ultrasound.

A biopsy can even be performed, but it is common to avoid this measure during the third trimester of pregnancy because

of anatomical and positioning issues.

Generally, only deteriorating kidney function or morbid nephritic syndrome is considered to be an indication for attempting a biopsy during pregnancy. Otherwise, it is preferred to wait until after delivery, Dr. August said.

It can be difficult to distinguish between intrinsic renal disease and preeclampsia. Renal disease can occur at any gestational age, but preeclampsia occurs after 20 weeks. Serum creatinine levels between 0.8 and 1.2 mg/dL are associated with preeclampsia, while levels of 1.5-1.8 mg/dL and higher are associated with renal disease.

“You almost never see azotemia in the setting of preeclampsia without proteinuria,” she said. In addition, intrinsic renal disease can occur with normal blood pressure, but a patient must be hypertensive to have preeclampsia.

Managing chronic renal disease during pregnancy requires a team approach that includes nephrologists. Dr. August recommends that patients be monitored frequently for preeclampsia—and for renal protection—blood pressure should be maintained within a slightly lower range than normal. ■

## How Pregnancy Affects Kidney Function

Normal pregnancies have complex effects on the kidneys and on hemodynamics—changes that bear keeping in mind when evaluating pregnant patients with chronic kidney disease, Dr. August said.

During pregnancy, kidney size, blood flow, and glomerular filtration rate (GFR) all increase. GFR increases by as much as 50%, said Dr. August, of Cornell University in New York.

Renal vasodilation leads to increases in renin, urinary protein, aldosterone excretion, sodium and water reabsorption, glycosuria, and aminoaciduria. There are concomitant decreases in uric acid reabsorption and serum creatinine, sodium, and osmolarity. Normal serum sodium for a pregnant woman is in the 135-137 mmol/L range. Likewise, serum creatinine levels can be as low as 0.5 mg/dL and is usually 0.6 mg/dL; levels above 0.8 mg/dL indicate a decreased GFR, she said.

Uric acid levels also are lower in pregnant women—something to keep in mind when evaluating patients for

possible preeclampsia, which causes serum uric acid levels to rise. In the second trimester, the normal uric acid level is usually not much higher than 3.5 mg/dL, and in the third trimester, it can go up as high as 4.5 mg/dL. “Anything higher than that is not quite normal,” Dr. August said.

Dilation of the urinary tract in pregnancy increases susceptibility to urinary tract infections. She recommends monthly screening for asymptomatic bacteriuria in pregnant women who are prone to urinary tract infections. Acute pyelonephritis can be much more serious than usual in pregnant women.

Hemodynamic changes during pregnancy include decreased blood pressure and increased cardiac output, heart rate, and respiratory rate. Some of these changes can actually be helpful for women with chronic kidney disease. Women who have been treated for hypertension and/or chronic kidney disease before pregnancy may require fewer medications during pregnancy.

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