

Pregnancy in Women on Dialysis: Is Success a Matter of Time?

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We know that we have to be wary of waxing too enthusiastic about a report on seven pregnancies in 5 women, but the article by Barua *et al.* in this issue of CJASN is the most encouraging report I have seen since the first time I started a pregnant woman on dialysis in 1984 and since the first successful pregnancy in a dialysis patient reported in 1971 (1).

In 1984, our information on pregnancy in dialysis patients was based on a report from the European Dialysis and Transplant Association, which recorded surviving infants in 22.9% of pregnant dialysis patients (excluding therapeutic abortions) (2).

For a brief period in the 1980s, we believed that continuous ambulatory peritoneal dialysis might lead to better outcome in pregnant dialysis patients (3), but the difference was based on the inclusion of women who started dialysis after conception and the European Dialysis and Transplant Association report as a discouraging historical control. Data from the Registry of Pregnancy in Dialysis Patients showed no difference in outcome between hemodialysis and peritoneal dialysis patients (4).

For 20 yr, there have been a few recurring themes.

1. Conception is extremely rare in dialysis patients. The rate of conception in Belgium was 0.3%, with 100% of dialysis units reporting (5), intermediate in less complete surveys in the United States and Japan (6), and highest in Saudi Arabia (1.4%) (7). Little has been done to try to increase the fertility rate in dialysis patients because intervention is hard to justify with the poor pregnancy outcomes for these women.

2. The likelihood of a surviving infant was 75% to 80% in women who started dialysis after conception but was only approximately 50% for women who conceived after starting dialysis and reached the second trimester (4). There was a high likelihood of a heart breaking second trimester loss or neonatal death.

3. Even in the 1980s, there was a general feeling that the amount of dialysis should be increased during pregnancy (2). By 2002, there were enough data available to say that 75% of infants would survive if dialysis was increased to 20 or more h

per week but that smaller increases in dialysis time were not beneficial (8). With more intensive dialysis, stillbirth became rare, but premature labor was still a major problem.

4. Severe prematurity was the rule for babies born to dialysis patients; 82% of babies reported to the registry were born before term and 18% were born before 28 wk of gestation. Mean gestational age was 29.5 wk for women dialyzed less than 20 h/wk and 34 wk for women dialyzed more than 20 h/wk.

We became familiar with the complications of pregnancy in dialysis patients. Most women were hypertensive. With the arrival of synthetic erythropoietin, we learned that dosage requirements increased during pregnancy as did iron requirements. We made adjustments in the dialysis bath required for more frequent dialysis (9). But we were left with babies born very early with at best a 75% success rate for pregnancies and more often a 40% to 50% success rate.

The current paper from Toronto describes a different world. It describes seven pregnancies in 5 women treated with nocturnal hemodialysis, with dialysis times averaging 36 h/wk. Because previous measures of outcome exclude elective abortion, the six pregnancies that were not electively terminated all resulted in surviving infants. Five of 6 babies were born at 36 wk gestation or greater. The 6th was born at 30 wk. The fertility rate among the 45 women of child bearing age was 15.6%, much higher than the 2.2% over 4 yr that we found (4). The women treated with nocturnal hemodialysis were self-selected for being able to take responsibility for their health. None had diabetes, which commonly complicates pregnancy in dialysis patients. There was no control group, in part because there were not enough pregnancies in women on conventional dialysis to serve as controls. Despite the small number of patients and limitations of the report, it is hard to escape the conclusion that the better outcomes were the result of longer dialysis times. The mean dialysis time during pregnancy was increased to 48 h. We do not know whether fertility rates will also increase with short daily dialysis, but we know from the pregnancy outcomes in women dialyzing 20 to 26 h/wk that the nocturnal hemodialysis (NHD) women do better.

While we await additional reports of pregnancies in NHD patients to determine whether these encouraging results continue, it seems reasonable to try to offer NHD to pregnant women and to suggest it to women who want to become pregnant. There is no simple solution for women who tire of

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frequent dialysis after a few months of pregnancy, but NHD may offer hope for women willing to commit 48 h/wk to having a successful pregnancy.

Disclosures

None.

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See related article, “Successful Pregnancies on Nocturnal Home Hemodialysis,” on pages 392–396.