Intensive Hemodialysis Associates with Improved Pregnancy Outcomes: A Canadian and United States Cohort Comparison

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ABSTRACT

Pregnancy is rare in women with ESRD and when it occurs, it is often accompanied by significant maternal and fetal morbidity and even mortality. Preliminary data from the Toronto Nocturnal Hemodialysis Program suggested that increased clearance of uremic toxins by intensified hemodialysis improves pregnancy outcomes, but small numbers and the absence of a comparator group limited widespread applicability of these findings. The authors compared pregnancy outcomes from 22 pregnancies in the Toronto Pregnancy and Kidney Disease Clinic and Registry (2000–2013) with outcomes from 70 pregnancies in the American Registry for Pregnancy in Dialysis Patients (1990–2011). The primary outcome was the live birth rate and secondary outcomes included gestational age and birth weight. The live birth rate in the Canadian cohort (86.4%) was significantly higher than the rate in the American
cohort (61.4%; \(P=0.03\)). Among patients with established ESRD, the median duration of pregnancy in the more intensively dialyzed Toronto cohort was 36 weeks (interquartile range, 32–37) compared with 27 weeks (interquartile range, 21–35) in the American cohort \((P=0.002)\). Furthermore, a dose response between dialysis intensity and pregnancy outcomes emerged, with live birth rates of 48% in women dialyzed \(\leq 20\) hours per week and 85% in women dialyzed \(>36\) hours per week \((P=0.02)\), with a longer gestational age and greater infant birth weight for women dialyzed more intensively. Pregnancy complications were few and manageable. We conclude that pregnancy may be safe and feasible in women with ESRD receiving intensive hemodialysis.

**COMMENTS**

The first successful pregnancy reported in a patient on chronic hemodialysis occurred in 1970, and was considered an overwhelming success. Initial enthusiasm was tempered with subsequent studies noting pregnancy in women with ESRD to be uncommon due to decreased fertility and often associated with poor outcomes. However, recent data suggest that pregnancy while on intensive hemodialysis may result in better outcomes, providing a viable option for young women whose reproductive years are lost to ESRD.

Nocturnal hemodialysis, as an intensive dialysis modality, resulted in reduced maternal and fetal complications. Intensive hemodialysis with enhanced multidisciplinary follow-up was associated with improved pregnancy outcomes compared with conventional dialysis regimens.

However, given that maternal and neonatal complications are still more frequent in pregnant ESRD patients than in the pregnant non-ESRD population, these patients require meticulous follow-up by a dedicated high-risk obstetrician in close collaboration with a nephrology team.