OBSERVATIONS

Improving Outcomes in Pregnant Women With Type 1 Diabetes

Despite the good intentions of the St. Vincent Declaration to reduce adverse outcomes down to that seen in nondiabetic pregnant women, maternal and perinatal adverse outcomes continue to be associated with type 1 diabetes. Optimized glycemia has been shown to be the best management for pregnant type 1 diabetic women (1). It is recognized that high A1C levels are associated with adverse outcomes. Indeed, glycemic control early in pregnancy appears to be critical in the prevention of congenital abnormalities in offspring of type 1 diabetic women (2). Therefore, strict targets of normal A1C are recommended for women planning pregnancy (3). Meeting this strict target A1C is undeniably challenging for patients and near impossible for most physicians. However, A1C may not reveal the whole glycemic picture. A prospective cohort study in type 1 diabetic women reported that even with an A1C level ≤7.0% in 75% of the population early in pregnancy, complication rates were increased compared with the background population (4). They concluded that this level of glycemia was insufficient to reduce abnormal outcomes. Data have shown that maternal postprandial glucose concentrations are correlated with risk of macrosomia (5).

However, it is crucial not to forget hypoglycemia; avoiding hypoglycemia in pregnant type 1 diabetic women is not only important in preventing adverse maternal outcomes, including seizures and coma, but also may be associated with embryopathy, although this has not been confirmed in clinical studies (6).

What can be done to improve glycemia without increased hypoglycemia with the aim of improving outcomes in pregnant type 1 diabetic women? Treatment with rapid-acting insulin analogs has been reported to decrease glucose fluctuations in type 1 diabetes, yet only a few observational studies have examined their utility in pregnancy.

A recent Cochrane analysis highlighted the lack of pregnancy data with rapid-acting insulin analogs (7). Mathiesen et al. (8) reported results from the largest to date randomized controlled trial in type 1 diabetes pregnancy, comparing insulin aspart with human insulin. They investigated maternal hypoglycemia, metabolic control, and safety, including perinatal outcomes. The results from 322 women confirm that insulin aspart is at least as effective and well tolerated as human insulin as part of a basal-bolus insulin regimen with NPH insulin. Their results clearly show that insulin aspart reduces postprandial glucose and lowers the risk of hypoglycemia in comparison with human insulin in pregnant type 1 diabetic women. It is promising to see that 80% of trial participants achieved A1C levels ≤6.5%.

The study also lends credence to the safety of insulin analogs in pregnancy. Many patients were randomized to insulin aspart treatment before conception, thereby providing an essential cohort that was exposed to aspart throughout the entire pregnancy period. In fact the Food and Drug Administration has just changed the category of insulin aspart from category C to category B, based on the safety profile. Perinatal and fetal outcomes from this trial are to be published separately, and these data will add to and clarify the safety of rapid-acting insulin analogs in pregnancy.

Additional trials with insulin analogs, including basal analogs, should be conducted in our quest to achieve the goals set by the St. Vincent Declaration.

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