



## Diabetic Pregnancy: Is it Time to Enjoy the Fruits of Our Labors?

Before insulin therapy, the diabetic pregnancy was a consummate disaster for mother and child. Maternal mortality approached 30%, and survival of the offspring was uncommon (1). Although in 1988 diabetic mothers and their offspring clearly benefit from better perinatal care, many of the improvements shown to decrease maternal and perinatal morbidity have yet to be incorporated into the routine health care of all diabetic women. Far too often, a successful outcome is simply assumed to be a viable newborn. This view overlooks the long-term health of the mother and her offspring, both of which depend on quality care before conception and in the years after delivery.

Congenital anomalies in the offspring of diabetic women are two to three times that of nondiabetic women (2); however, recent experience indicates that this rate can be reduced to that of the general population. The reduction is accomplished by tight glucose control during the first trimester or period of organogenesis (3).

Neonatal macrosomia continues to be a source of morbidity for both mother and child. Shoulder dystocia, brachial plexus injury, and bone fracture are encountered more commonly during vaginal delivery of the macrosomic fetus (4). In light of this, some authors recommend primary cesarean section in all pregnant diabetic women suspected of having a macrosomic fetus (>4000 g; 5). Thus, macrosomia contributes to the increased rate of cesarean section (33–69 vs. 20% among

nondiabetic mothers; 6,7) and may be thought of as yet another consequence of less than optimal diabetic control.

A better solution would be the prevention of fetal macrosomia. Tight control may be necessary during early gestation because near-normal glycemia late in pregnancy has been shown to have a poor correlation with neonatal weight (8). In this issue, Mazze and Langer (p. 263) report that early identification and treatment of women with diabetes resulted in a decrease from 34 to 15% in the incidence of macrosomia and an impressive cesarean section rate of only 16%.

What is not understood by many is the rigorous degree of glycemic control needed throughout pregnancy to achieve these results. The goal is fasting and preprandial blood glucose concentrations in the range of 4–5 mM and 2-h postprandial values <6.7 mM, representing the upper limits of normal glucose concentrations in the pregnant nondiabetic woman (9). This impressive degree of glucose control is realistic and effective not just for women attending tertiary centers but also for women included in a statewide prevention program (10). The need to start more statewide projects and to assess their impact on the reduction of morbidity in pregnancy has been stressed by Braveman et al. (p. 281).

Although these studies address the immediate problems of the diabetic pregnancy, it must be emphasized that the metabolic disturbances of the woman with gestational diabetes may extend beyond the perinatal period (11). Pregnancy is nature's stress test, and carbohydrate intolerance during gestation may be the harbinger of diabetes later in life (12).

These and similar data have led to the prudent recommendation that all women with a history of gestational diabetes have periodic postpartum follow-up to detect diabetes early in its development (13). In addition, it is wise to encourage these women to continue

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to follow the dietary advice given during pregnancy. Postpartum, the diet may need to be adjusted for lactation and in many women eventually restricted to achieve ideal body weight. Regular exercise may aid in the maintenance of ideal body weight and improve glucose tolerance. These nonpharmacologic interventions are apt to be more successful during the perinatal period as opposed to the obstacles encountered when implementing life-style changes later in life.

The problems faced by the infant of the diabetic mother may also continue beyond the perinatal period. Obesity and glucose intolerance occur more frequently among these children (14). Whether rigorous control of maternal glycemia and attention to the child's subsequent diet reduce these long-term risks are critical issues deserving further study. In the meantime, such therapeutic measures seem reasonable.

How can we ensure that every pregnant woman with diabetes is found and receives optimal care? Where do we proceed from here? First, it is fundamental that practitioners institute good medical management of the woman with preexisting diabetes before conception. Prudent family planning is the initial step to ensure that conception occurs during a state of optimal glucose control.

Second, every pregnant woman should be screened for diabetes during pregnancy. Although the 3-h oral glucose tolerance test is the current standard, a more sensitive test applied to earlier periods of pregnancy may be desirable. Further research into this area is needed.

Finally, the infant and the mother will both require long-term follow-up. In addition to the care given by the obstetrician, coordinated efforts of the patient's primary physician and the child's pediatrician may prevent or ameliorate subsequent metabolic morbidity. Considerable professional education designed to implement such specialized care beyond the immediate perinatal period is needed. All members of the health-care profession must heed the message: diabetes during pregnancy is not just a fleeting metabolic accident of 9 mo duration.

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