Timing of treatment initiation for mild gestational diabetes mellitus and perinatal outcomes

Anna Palatnik, MD; Lisa Mele, ScM; Mark B. Landon, MD; Uma M. Reddy, MD, MPH; Susan M. Ramin, MD; Marshall W. Carpenter, MD; Ronald J. Wapner, MD; Michael W. Varner, MD; Dwight J. Rouse, MD; John M. Thorp Jr, MD; Anthony Sciscione, DO; Patrick Catalano, MD; George R. Saade, MD; Steve N. Caritis, MD; Yoram Sorokin, MD; for the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network

OBJECTIVE: The purpose of this study was to examine the association between gestational age (GA) at the time of treatment initiation for gestational diabetes mellitus (GDM) and maternal and perinatal outcomes.

STUDY DESIGN: We conducted a secondary analysis of a multicenter randomized treatment trial of mild GDM in which women with mild GDM were assigned randomly to treatment vs usual care. The primary outcome of the original trial, as well as this analysis, was a composite perinatal adverse outcome that included neonatal hypoglycemia, hyperbilirubinemia, hyperinsulinemia, and perinatal death. Other outcomes that were examined included the frequency of large for GA, birthweight, neonatal intensive care unit admission, gestational hypertension/preeclampsia, and cesarean delivery. The interaction between GA at treatment initiation (stratified as 24-26, 27, 28, 29, and $\geq$30 weeks of gestation) and treatment group (treated vs routine care), with the outcomes of interest, was used to determine whether GA at treatment initiation was associated with outcome differences.

RESULTS: Of 958 women whose cases were analyzed, those who initiated treatment at an earlier GA did not gain an additional treatment benefit compared with those who initiated treatment at a later GA (probability value for interaction with the primary outcome, .44). Similarly, there was no evidence that other outcomes were improved significantly by earlier initiation of GDM treatment (large for GA, $P = .76$; neonatal intensive care unit admission, $P = .8$; cesarean delivery, $P = .82$). The only outcome that had a significant interaction between GA and treatment was gestational hypertension/preeclampsia ($P = .04$), although there was not a clear cut GA trend where this outcome improved with treatment.

CONCLUSION: Earlier initiation of treatment of mild GDM was not associated with stronger effect of treatment on perinatal outcomes.

Key words: gestational age, gestational diabetes mellitus, outcome

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From the Departments of Obstetrics and Gynecology of Northwestern University, Chicago, IL (Dr Palatnik); The Ohio State University, Columbus, OH (Dr Landon); The University of Texas Health Science Center at Houston—Children's Memorial Hermann Hospital, Houston, TX (Dr Ramin); Alpert Medical School, Brown University, Providence, RI (Dr Carpenter); College of Physicians and Surgeons, Columbia University, New York, NY (Dr Wapner); University of Utah School of Medicine, Salt Lake City, UT (Dr Varner); University of Alabama at Birmingham School of Medicine, Birmingham, AL (Dr Rouse); University of North Carolina at Chapel Hill School of Medicine, Chapel Hill, NC (Dr Thorp); Drexel University School of Medicine, Philadelphia, PA (Dr Sciscione); Case Western Reserve University—MetroHealth Medical Center, Cleveland, OH (Dr Catalano); University of Texas Medical Branch, Galveston, TX (Dr Saade); University of Pittsburgh School of Medicine, Pittsburgh, PA (Dr Caritis); Wayne State University School of Medicine, Detroit, MI (Dr Sorokin); and the George Washington University Biostatistics Center, Washington, DC (Ms Mele); and the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, Bethesda, MD (Dr Reddy).

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Corresponding author: Anna Palatnik, MD. anna.palatnik@northwestern.edu

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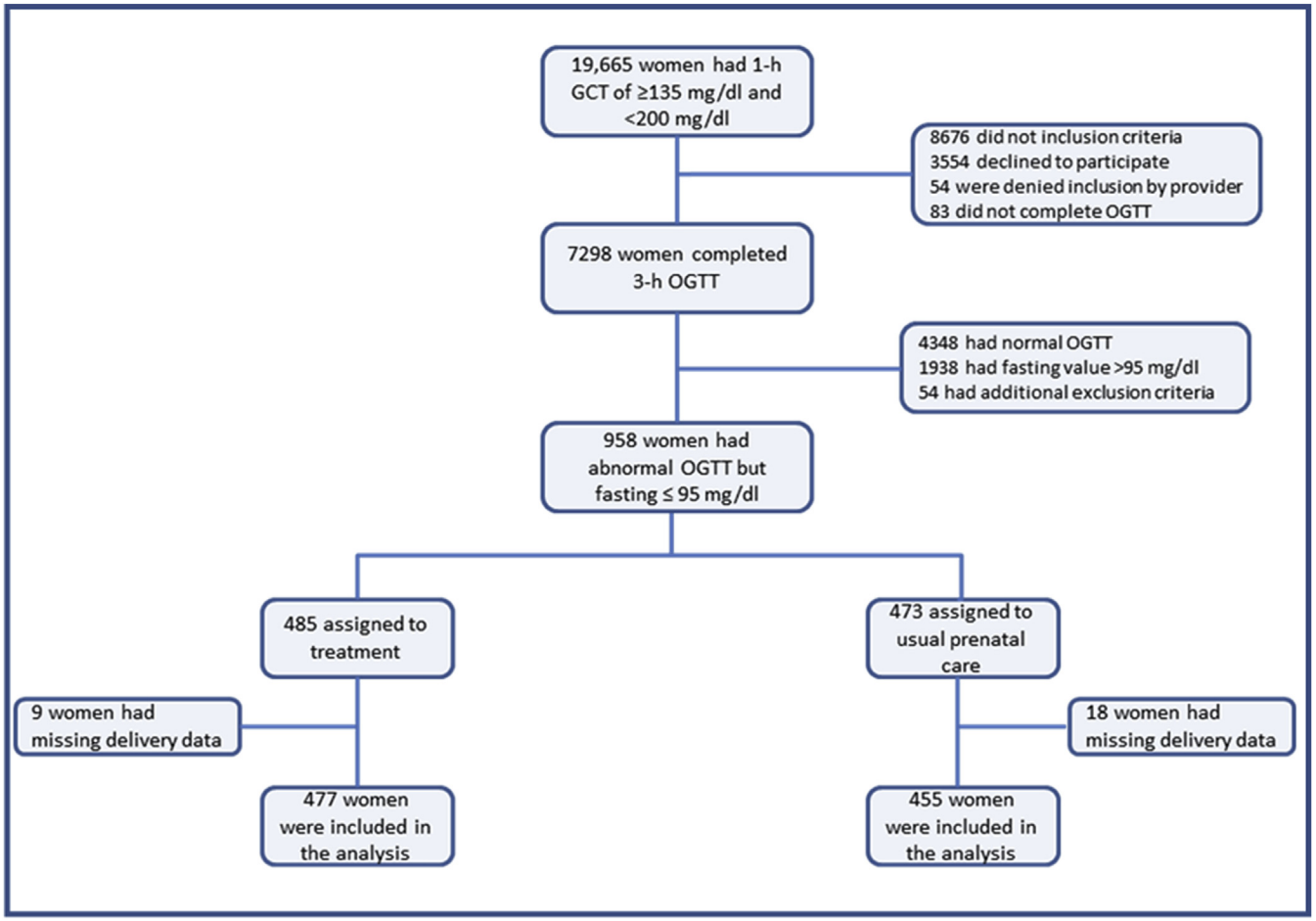
High-quality evidence now exists regarding the association of maternal hyperglycemia with adverse perinatal outcomes; these outcomes may be improved with the treatment of mild gestational diabetes mellitus (GDM).[1-3] However, international consensus is still lacking on optimal screening and diagnostic guidelines.

In the United States, pregnant women undergo universal screening and a 2-step approach for GDM diagnosis.[4,5] This approach involves performing a 50-g glucose challenge test (GCT), followed by an oral 100-g glucose tolerance test (OGTT) when the GCT results are beyond a certain threshold. The optimal time to perform these tests remains uncertain and may differ depending on the population that is screened.[6-12] Currently, the American College of Obstetricians and Gynecologists recommends screening women without risk factors for GDM at 24-28 weeks of gestation.[13] However, when the screening and subsequent diagnostic testing is done at the end of this range, the interval from subsequent therapeutic intervention to delivery is obviously shorter than with earlier testing and diagnosis. We hypothesized that earlier diagnosis and a corresponding longer period of treatment would result in improved outcomes compared with later diagnosis and treatment, after controlling for clinical covariates. Therefore, the objective of this analysis was to examine whether earlier initiation of screening and subsequently treatment of mild GDM can lead to improved maternal and perinatal outcomes.

Materials and Methods

This was a secondary analysis of the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network randomized GDM treatment trial.[3] The trial was designed to determine whether treatment of mild GDM reduces perinatal and obstetric complications. Pregnant women between 24 weeks 0 days and 30 weeks 6 days of gestation were screened for GDM with a 50-g GCT and those with a 1-hour blood glucose value of 135-200

FIGURE 1
Screening, enrollment, and random assignment to study group



h, hour; *GCT*, glucose tolerance test; *OGTT*, oral glucose tolerance test.

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