Prevalence of Pharmacologically-treated Diabetes in Term Pregnancies in Haryana, India

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Abstract

Gestational diabetes mellitus (GDM) is common in pregnancy. Epidemiological studies have described the prevalence of GDM in the antenatal period, but do not assess the number of women who require pharmacological therapy at term. This information is important for obstetric care providers and health planners. We reviewed indoor charts of all women admitted for delivery at a maternity center in Karnal, Haryana, India. Of the 569 participants, 0.87% had preexisting diabetes, while 1.93% were being treated with drugs for GDM (0.70% insulin, 1.23% metformin). The overall prevalence of diabetes needing drug therapy at time of delivery in pregnant women was 2.81%.

Keywords: Aspart, detemir, diabetes, gestational diabetes mellitus, pregnancy, premixed aspart, metformin

Introduction

Diabetes, especially gestational diabetes, is a common comorbid feature of pregnancy. The prevalence of gestational diabetes mellitus (GDM) is rising rapidly. The global prevalence of hyperglycemia in pregnancy in women (20–49 years) was thought to be 16.9%, or 21.4 million live births in 2013. About 16.0% of these cases may be due to full blown diabetes in pregnancy. The highest prevalence (25.0%) is found in the Southeast Asia Region.[1]

Diagnosed by an oral glucose tolerance test (OGTT), GDM prevalence has been reported as 16.55% across India.[2] Using American Diabetes Association criteria for 75 g 2 h OGTT, Rajput et al. have found a 7.1% prevalence of GDM in women at 24–28 weeks gestation, in Rohtak, Haryana.[3] A population screening program in neighboring Punjab, which included 5100 randomly selected women of the same gestational (24–28 weeks), revealed a 35% prevalence of GDM using the World Health Organization 2013 criteria, and 9% using the WHO 2009 criteria.[4] New Delhi reports an overall prevalence of GDM of 15.49%.[5]

These reports, while important from an epidemiological and clinical angle, do not necessary translate into similar numbers in the maternity ward. There is no report which looks at GDM, or diabetes in pregnancy from the viewpoint of a practicing obstetrician who handles the labor room.

We set out, therefore, to study the prevalence of pharmacologically treated diabetes, including GDM, in women presenting for delivering at our maternity center.

Materials and Methods

Data from a single maternity center, located in Karnal, Haryana, Northern India, were analyzed to assess the prevalence of pharmacologically treated diabetes in antenatal women at term. These data were obtained from indoor records of antenatal women delivering at this center from April 1, 2016, to March 31, 2017. As this was a retrospective study, with no intervention, and as strict patient confidentiality was maintained, ethics committee clearance was not sought.

Records were screened to assess for obstetric history, type of delivery, fetal outcome, and type and dose of glucose-lowering medication.

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RESULTS
During the period April 1, 2016–March 31, 2017, 569 women delivered at our maternity center. Of these 95.8% were literate, with 16.0% having passed matriculation, 30.6% reporting a graduate degree, and 41.7% possessing a postgraduate qualification. Of the cohort, 42.7% were primigravida, 27.8% second gravid, and 16.0% third gravid, while the rest were grand multipara. When parity was assessed, 37.8% were found to be primipara, and 8.4% were the second para. Of all the women included, 19.7%, 8.4%, and 1.4% reported a history of one, two, and three abortions, respectively. A total of 1.7% women had experienced 4–8 abortions in the past.

The frequency of normal vaginal delivery was 59.1%, with 40.9% undergoing operative delivery. Breech presentation was noted in 6.2% cases. Gender of the baby was male in 52.9% cases, and 1.1% women delivered twins. Two cases of intrauterine death/still born fetus were noted, of whom one was in diabetic pregnancy. There was no statistically significant difference between women with diabetes and without diabetes in terms of mode of presentation, type of delivery, gender of baby, or fetal outcome.

Preexisting diabetes was reported by 0.87% women (n = 5), all of whom had type 2 diabetes before onset. They were treated with bolus insulin (n = 1), three dose-intensive regime (rapid-rapid-premixed) (n = 3), and basal bolus regime (m = 1). At time of delivery, the dose required was as follows: bolus: 30 units; three dose-intensive regime: 40, 45, 58 units; and basal bolus: 56 units/day. Insulin analogues were used in four of these patients (aspart, premixed aspart, and detemir).

Eleven women (1.93%) had GDM which required medication. Of these four (36.36%) were treated with insulin and seven (63.63%) with metformin. The insulin regimes used were bolus (n = 1) premixed (n = 2) and basal-bolus (m = 1), with dose requirement varying from 16 to 64 units. The dose requirement of metformin ranged from 500 mg/day (m = 3) to 750 mg/day (m = 1) and 1500 mg/day (n = 2).

DISCUSSION
Of the 569 women who delivered, nine were on insulin, while seven were being treated with metformin. This implies a 2.81% prevalence of pharmacologically treated diabetes mellitus during pregnancy. We did not attempt to estimate the number of women treated with medical nutrition therapy. Hence, our data cannot be compared with studies which report the prevalence of GDM. Rather, our data provide a realistic idea of the drug treatment burden that women with diabetes face during pregnancy. These data will be of help obstetricians and health planners, who wish to anticipate and plan for the expected load of pharmacologically treated diabetes in the maternity ward.

Our report also highlights the wide variation in insulin dose requirement, and the fact that a significant number of women can be managed effectively and safely with metformin. It is well documented that up to 90% of women with GDM may be controlled in medical nutrition therapy alone. Increasingly, evidence is also available to support the use of metformin in GDM. Our results tend to corroborate with these trends. We have been able to use metformin monotherapy in 40% of all pregnant women with diabetes, and 60% of all pregnant women with GDM. The high dose requirements in our insulin-treated patients suggest that these women had severe hyperglycemia, which could not have been managed with metformin monotherapy.

We wish to point out a few characteristics which may limit the applicability of our data. This is a single private center-based study from a city which is home to; government medical college and is in proximity to many tertiary care institutions. The government sector provides financial incentive to deliveries which take place in public sector facilities. It is possible, therefore, that complicated deliveries, including those with diabetes, may occur in larger proportions in such hospitals. On the other hand, our site of research is associated with an endocrinology center, and this may have led to a higher percentage of diabetic deliveries.

CONCLUSION
The burden of pharmacologically treated diabetes in women presenting for delivery is significant. Obstetric care providers and health planners should be cognizant of this fact.

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Conflicts of interest
There are no conflicts of interest.

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