An audit of stillborn babies in mothers with diabetes mellitus at a tertiary South African hospital

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Introduction

The incidences of Type II diabetes mellitus (DM) and gestational diabetes mellitus (GDM) are rising. Contributing factors include the pregnant population becoming older and more obese and the downward adjusted diagnostic thresholds for the diagnosis of GDM following the ACHOIS and HAPO studies. [1,2]

The guidelines for the management of patients with diabetes in pregnancy at Tygerberg Hospital are on par with international recommendations.[3,4]

All inborn perinatal deaths at Tygerberg Hospital are discussed at a weekly, multidisciplinary meeting.
A primary cause of death, associated patient-related, medical- and administrative avoidable factors are identified.

This audit re-examined the stillbirths related to maternal diabetes, analysing the timing and factors associated with this outcome.

Materials and Methods

This retrospective audit spanned six years (01/01/2010 to 31/12/2015) following implementation of a new guideline on the management of diabetes[5] at Tygerberg Hospital (a combined secondary/tertiary referral unit in Cape Town, South Africa).

All perinatal deaths are entered into the national Perinatal Problem Identification Program (PPIP) database.

The diagnosis of pre-gestational diabetes (Type I or II) was made when the history was known. Gestational diabetes was regarded as any new onset dysglycemia in pregnancy. Care was taken to differentiate this from undiagnosed pre-gestational diabetes where possible.

Delivery was offered as standard practice at 38 weeks' gestation.[3] An intra-uterine death/stillbirth was defined as asystole in a newborn of >500g birth weight. The gestational age at IUD diagnosis was used.

Records were retrieved and file numbers re-linked to all diabetes associated stillbirths over six years. File records were scrutinized using a data sheet with study numbers only. Descriptive statistics were used to describe the data.

Results

During the study period, a total of 59 stillbirths (including one set of twins) were attributed to DM. These 59 stillbirths constituted 2.3% of all stillbirths and 0.14% of the 43 095 births (>500g) during the study period.[6]
When expressed as a stillbirth rate for all births >500g from 2010 to 2015 the figure was 1.39/1000.

Distribution of the types of diabetes were as follows: Type I DM 28.1%, Type II DM 65.9% and GDM 7% of the group respectively.

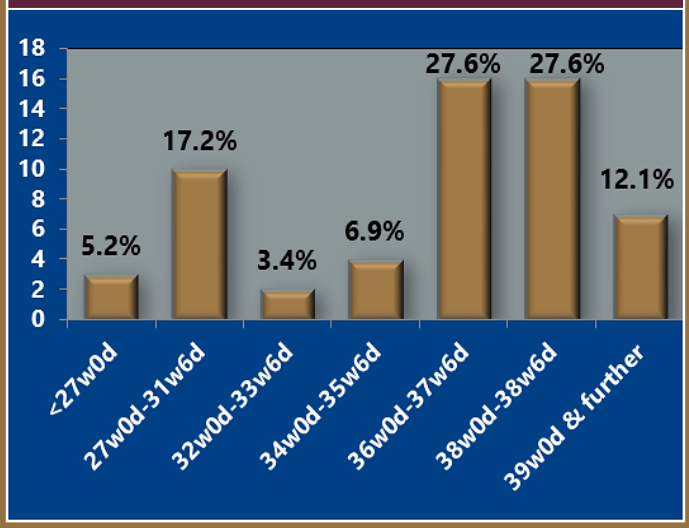
Thirty-one (77.5%) of the deaths amongst the Type II group occurred after 36w0d.

The median booking HbA1c value (n=44) was 8.3% (range 5.9-12.0%) and the median pre-delivery value was 8.4% (range 6.0-14.1%).

Table 1: Maternal Characteristics* (at study entry)	Data *(median/range or n%)*
Age (years)	31 (17-44)
Gravidity Parity	3 (1-11) 3 (0-11)
Body Mass Index (kg/m^2) <20 20.1 - 25.0 25.1 - 30.0 30.1 - 40.0 40.1 – 50.0 >50.1	 0 (0.0) 7 (14.5) 9 (18.8) 25 (52.1) 2 (4.2) 5 (10.4)
Chronic Hypertension	15 (25.4)
Any previous pregnancy loss ≥ 24 weeks	8 (16.7)
Previous pregnancy loss ≥ 24 weeks ascribed to diabetes	3 (6.0)
Previous baby ≥ 4 kg	4 (7.8)
Gestation at booking (weeks) Booked < 24w0d	17 (5-38) 34 (64.2)
Gestation at entry to appropriate level of care	26 (6w0d-40w0d)

**Data not available for all 59 cases*

Table 2:
Number of Stillbirths in Gestation Categories



Discussion and Conclusions

Patient compliance with antenatal care in low-middle income countries is challenging. No, late or irregular accessing of antenatal care deprives women of certain gestation-specific investigations and opportunities for clinicians to intervene meaningfully. Economic hardship often prevents full compliance with a diabetic diet and exercise.

Administrative avoidable factors centre around the capacity to screen, diagnose and manage ever-increasing numbers of pregnant women with diabetes in an obesogenic society.
All healthcare workers should promote awareness about the implications of a pregnancy in a woman with diabetes, attempt to differentiate pregestational DM vs GDM and refer timely to the appropriate level of care.

Despite the rising incidence of DM and GDM, stillbirth in this group constituted only a small percentage of the total stillbirth burden at this hospital. Increased surveillance from 36 weeks' gestation may decrease stillbirth rate. Correct patient selection for earlier delivery remains a clinical challenge especially in the context of a resource-constrained neonatal service.

References

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