

Hyperglycaemic emergencies in pregnancy: case reports and literature review

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Abstract

Two cases are presented of diabetic ketoacidosis (DKA) occurring in newly presenting gestational diabetes mellitus (GDM) in Nigeria. Both were associated with foetal death, and the cases emphasise the need for efficient GDM screening and patient education. GDM is increasing in frequency, and the 2013 World Health Organization (WHO) Guidelines give simple and applicable guidelines for screening, diagnosis, and management. Even glycosuria testing can be helpful at a primary care level. The reoccurrence of GDM is also high (up to 50% of cases), and such women should be encouraged to seek early antenatal care in subsequent pregnancies.

Introduction

Globally, about 1-14% of pregnancies are complicated by hyperglycaemia.¹⁻³ However, recent evidence from the International Diabetes Federation (IDF) shows that the comparative prevalence of hyperglycaemia in pregnancy in women aged 20-49 years can be as high as 25% in the SouthEast Asia (SEA) region.⁴ Diabetes that is first diagnosed in pregnancy is called gestational diabetes mellitus (GDM) and usually resolves after pregnancy. A retrospective study in Nigeria showed that the incidence of diabetes in pregnancy is 1.7%.⁵ The study showed that 39% of the cases were known cases of diabetes before pregnancy, while 61% were cases of GDM. The WHO 2013 Guidelines recommend that a diagnosis of GDM should be given at any time in pregnancy if one or more of the following is/are present: fasting plasma glucose (FPG) of 5.1-6.9 mmol/l; 1-hour plasma glucose ≥ 10.0 mmol/l following a 75 g oral glucose load; or a 2-hour plasma glucose of 8.5-11.0 mmol/l following a similar oral glucose load.^{4,6} All types of diabetes are associated with increased maternal and foetal morbidity

and mortality, and this is worse in poorly controlled cases. Poor diabetic control early in pregnancy is associated with spontaneous abortion, congenital malformations, intrauterine foetal death, and macrosomia. Later in pregnancy, poor diabetic control is associated with polyhydramnios and preterm delivery. Plasma glucose values greater than 10.0 mmol/l (180 mg/dl) are considered unsafe, and are associated with foetal hypoxia and a wide variety of foetal and maternal complications.⁷⁻⁹ This report describes two cases of severe hyperglycaemic emergencies in patients newly presenting with GDM.

Case 1. A 30-year-old lady was admitted with a 1 week history of polyuria, polydipsia, generalized body weakness, and upper abdominal pain. She was not known to have diabetes. She was 28 weeks pregnant, gravida 2; her first baby was a live female, born 14 months previously weighing 3.5 kg, and delivered by spontaneous vaginal birth at 39 weeks. On examination the patient was ill, drowsy, and dehydrated. Pulse was 120 beats/minute and regular; blood pressure (BP) was normal. The patient had Kussmaul's respiration, the fundal height was 28 weeks, and there were no foetal heart sounds. Urine was ++ positive for glucose, protein, and ketones. Glucose meter blood glucose (BG) level was >33.3 mmol/l. A diagnosis of GDM, diabetic ketoacidosis (DKA), and intrauterine death was made; and she was treated with intravenous fluids and insulin. She improved, but delivered a stillbirth. On discharge 6 days later her fasting blood glucose (FBG) was 11.8 mmol/l, at follow-up it was 5.0 mmol/l.

Case 2. A 29-year-old woman was admitted at about 28 weeks of pregnancy. She complained of weakness, nausea, polyuria, polydipsia, nocturia, and paraesthesia of 1 week's duration. Her father had diabetes. She had her first baby 3 years ago by Caesarean section and the baby weighed 6.4 kg. She was not diagnosed as diabetic during her first pregnancy. On examination she was dehydrated and lethargic. She had a pulse of 132 beats/minute and a BP of 130/50 mmHg. Her glucometer BG was >33.3 mmol/l. Abdominal ultrasound showed an absence of foetal activity and a gestational age of 24 weeks and 4

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days. Her urine was ++ positive for glucose and ketones. A diagnosis of GDM, DKA, and foetal death was made; and she was treated with intravenous fluids and insulin. She had a stillbirth after induction, by vaginal delivery. She was discharged 14 days after admission, and at the time her FBG was 4.8 mmol/l.

Discussion

Both these cases presented with extreme hyperglycaemia and ketosis clinically consistent with DKA. Neither of the women had previously diagnosed GDM, in the current or past pregnancies. Both were well educated, but presented with their symptoms late.¹⁰⁻¹² DKA in pregnancy is known to occur, and rates of 2.0- 9.3% have been reported.¹³⁻¹⁵ It can occur in both pre-existing type 1 diabetes and GDM, and may be precipitated by malaria,¹³ or other infections such as urinary tract infection, gastro-enteritis, or pneumonia.¹³⁻¹⁵

Total live births in women aged 20–49 years were estimated to be 127.1 million globally in 2013.⁴ The number with hyperglycaemia in pregnancy was 21.4 million – a prevalence of 16.8%. In Nigeria, the retrospective hospital study done in Enugu, south-east Nigeria, showed a high proportion of GDM compared with cases of pregnancy where diabetes was previously known about – 61% and 39% respectively.⁵ Most of the cases of hyperglycaemia in pregnancy occur in low and middle income countries, where access to maternal care is limited – in fact 92% of all cases of hyperglycaemia in pregnancy occur under this setting. Table 1 shows the seven regions of the International Diabetes Federation (IDF) and the number of cases of diabetes in live births (in millions), comparative prevalence (%), and the proportion that may be due to diabetes in pregnancy.

In conclusion, there is a growing epidemic of GDM. The two cases reported here showed extreme high blood glucose values on presentation, complicated by ketoacidosis and stillbirth, in two young women.

Efficient screening for GDM is vitally important if severe complications such as these are to be avoided. Patient education is also important, to enhance awareness of diabetes-related symptoms.

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IDF region	Cases in live births (millions)	Comparative prevalence (%)	Cases due to GDM (%)
Africa	4.6	14.4	19.6
Europe	1.7	12.6	10.9
Middle East & North Africa	3.4	17.5	17.7
North America & Caribbean	0.9	10.4	24.9
South & Central America	0.9	11.4	17.3
South East Asia	6.3	25.0	9.5
Western Pacific	3.7	11.9	14.1
Total/Mean	21.4 million	14.8%	16.3%

Table 1 Hyperglycaemia in pregnancy (age 20-49 years) by IDF regions, 2013.⁴