LETTER TO THE EDITOR

Pregnancy in a patient with type 1 diabetes mellitus and prior ischaemic heart disease

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An association between type 1 diabetes mellitus and pregnancy was considered to be a high-risk situation in the past. Optimal preconception care and advances in the management of pregnancy have dramatically declined maternal and perinatal morbidity. The co-existence of myocardial ischaemic heart disease and diabetes (White class H) has been considered a formal contraindication for pregnancy because high foetal and maternal mortality complicate this class of disease (1, 2). The association of myocardial ischaemic heart disease and diabetes during pregnancy is uncommon; however, it may become a more frequent complication with the tendency towards an older child-bearing age in women.

We report a pregnancy in a diabetic woman 5 years after myocardial infarction. I. C. L., a 35-year-old female with a 15-year history of poorly controlled type 1 diabetes mellitus, was first seen at 10 weeks of gestation. She had pre-proliferative diabetic retinopathy, which had required laser therapy, but no evidence of renal disease. She smoked 10 cigarettes a day.

Five years earlier she had been admitted to hospital with sudden onset substernal chest pain that had lasted 4 h and was associated with sweating and general weakness. The physical examination was normal. An electrocardiogram revealed typical signs of an acute inferior myocardial infarction. Lactate dehydrogenase, creatinine kinase and myocardial band isoenzymes were found to be elevated consistent with recent myocardial infarction. She had an uncomplicated recovery and was diagnosed on discharge of acute inferior myocardial infarction. Cardiac catheterization, performed after hospital discharge, showed no evidence of coronary artery stenosis and normal left ventricular ejection fraction. Aspirin treatment was then initiated.

When the patient presented in early pregnancy she had experienced several episodes of severe hypoglycaemia and poor diabetes control (previous HbA1c 8%; normal range 4–6%). The patient was counselled on the potential hazards but she decided to continue the pregnancy. During her subsequent prenatal course, the patient underwent exhaustive diabetes control and HbA1c fell to 6.5% by 22 weeks' gestation. Direct ophthalmoscopy revealed no changes in her retinopathy and the albumin excretion rate remained within normal values. Cardiac function was stable and she was asymptomatic throughout pregnancy. At 30 weeks

gestation the patient presented with severe vomiting and was admitted to hospital because of poor metabolic control. Corticosteroids were administered for induction of foetal lung maturity. At 32 weeks' gestation an elective Caesarean section with epidural blockade was planned in view of worsening metabolic control and the high risk for the mother. A 2170 g (normal birth weight for gestational age) live male infant was delivered, with an Apgar score of 9 at 5 min. The baby was noted to have an atrial septal defect and developed neonatal hypoglycaemia, hypocalcaemia, respiratory distress syndrome, which required mechanical ventilation, hyperbilirubinaemia and multifactorial anaemia. The infant was discharged (2920 g) on postpartum day 45, and surgical repair of the interatrial communication was performed at 9 months. The mother had an uncomplicated puerperium, except for the development of postpartum thyroiditis.

Only 10 cases of pregnancy in diabetic women with a prior history of ischaemic heart disease have been reported previously (1, 3–8); no maternal mortality occurred and there were only two foetal losses (Table 1). Maternal and foetal outcome, including our case, is viewed as satisfactory, this being especially true in those patients in whom cardiac surgery was performed before pregnancy.

Pregnancy in women with pre-existing ischaemic heart disease must be considered a high risk situation. Therefore, if pregnancy is desired, careful preconception evaluation and counselling is mandatory. Prior to conception, cardiological examination must include an evaluation of ventricular performance and coronary anatomy, as these are the main prognostic factors (2). In our patient, who did not seek preconception counselling, satisfactory outcome is certainly related to absence of coronary artery stenosis and normal left ventricular ejection fraction. Additionally, time elapsed between myocardial infarction and pregnancy (5 years in our patient) could have conferred further haemodynamic stability. Hypertension, an associated risk factor for myocardial infarction during pregnancy, must also be evaluated and treated if necessary. Normal blood pressure throughout pregnancy in our patient, could have contributed to a favourable outcome.

Pregnancy in women with diabetes, with or without vascular disease, carries an increased risk of foetal malformations related to glycemic control at the time of

Table 1 Clinical characteristics and pregnancy outcome in diabetic women with a prior history of ischaemic heart disease.

Maternal age (years)	Duration of diabetes (years)	Time of IHD before pregnancy	Type of IHD	Cardiac risk factors	Maternal mortality	Foetal mortality	Reference
23	10	Unknown	AMI	FH, HT obesity	No	No	3
28	22	2 years	AMI	None	No	No	4
23	18	3 months	Angina	None	No	No	4
36	18	2 months	AMI	None	No	Yes	4
30	20	3 months	AMI	Smoking	No	No	5
31	27	3 years	AMI	None	3 months postpartum	No	5
32	17	2 years	Angina*	None	No	No	6
Unknown	Unknown	3 months	AMI*	None, unknown	No	No	1
29	18	17 months	AMI*	Smoking	No	No	7
38	6	5 years	Angina	HT	No	Yes	8
35	20	5 years	AMI	Smoking	No	No	**

AMI, acute myocardial infarction; FH, family history; HT, hypertension; IHD, ischaemic heart disease.

* Previous coronary artery bypass graft.

** Case presented.

conception. Therefore, the infant's atrial septal defect is most probably related to poor glycaemic control, which was evident in our patient.

The case presented may provide information on the limited experience with pregnancy after myocardial infarction in women with diabetes. This case, and the accumulated experience in the literature, demonstrates that good ventricular performance and normal coronary vessels warrant a good prognosis for women with diabetes who conceive after myocardial infarction. Additionally, this case emphasises the importance of good glycaemic control before conception.

References

- Hare JW & White P. Pregnancy in diabetes complicated by vascular disease. *Diabetes* 1977 **26** 953–955.
- Gordon MC, Landon MB, Boyle J, Stewart KS & Gabbe SG. Coronary artery disease in insulin-dependent diabetes mellitus of pregnancy (class H): A review of the literature. *Obstetrical and Gynecological Survey* 1996 **51** 437–444.
- Silfen SL, Wapner RJ & Gabbe SG. Maternal outcome in class H diabetes mellitus. *Obstetrics and Gynecology* 1980 **55** 749–751.
- Gast MJ & Rigg LA. Class H diabetes and pregnancy. *Obstetrics and Gynecology* **66** (Suppl)1985 5–7.
- Wilson DJ, Moore G & Chipps D. Successful pregnancy in patients with diabetes following myocardial infarction. *Australian and New Zealand Journal of Obstetrics and Gynecology* 1994 **34** 604–606.
- Reece EA, Egan JFX, Coustan DR, Tamborlane W, Bates SE, O'Neill TM *et al.* Coronary artery disease in diabetic pregnancies. *American Journal of Obstetrics and Gynecology* 1986 **154** 150–151.
- Pombar X, Strassner HT & Fenner PC. Pregnancy in women with class H diabetes and previous coronary artery bypass graft: part 2. A case report and review of the literature. *Obstetrics and Gynecology* 1995 **85** 825–829.
- Siegler AM, Hoffman J & Bloom O. Myocardial infarction complicating pregnancy. *Obstetrics and Gynecology* 1956 **7** 306–311.

Received 20 October 2000

Accepted 23 October 2000