

Case Report

COMPLETE REMISSION OF DIABETES MELLITUS DURING PREGNANCY

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Since the discovery of insulin in 1921, the elucidation of some of the complexities of diabetes mellitus has been remarkable and intriguing. Nevertheless, we are far from a complete understanding of this common disorder, especially when complicated by pregnancy.

Before the advent of insulin, it was exceptional for a diabetic to become pregnant; if she did, and retained the foetus to full-term, she had an even chance of dying with a 90% chance of foetal death. The management of the pregnant diabetic has become fairly uniform over the years as far as the mother is concerned, and maternal mortality is now low. Foetal wastage, however, is still too high. This, it would seem, indicates our ignorance of the underlying hormonal and metabolic changes affecting the mother, placenta, foetus and their interrelationships. The following unusual case serves to high-light this point.

Case History

Mrs. S.R., aged 35 years, a patient at Groote Schuur Hospital. (59/06420)

Before 1959 she had had 4 full-term normal deliveries with birth-weights around eight pounds. This was followed by a miscarriage at 3 months.

During 1959 she presented with symptoms of diabetes and was referred to the Diabetes Clinic at Groote Schuur Hos-

pital. She was moderately over-weight and a post-prandial blood-sugar level was 310 mg./100 ml. Tolbutamide was prescribed, but had little effect and reasonable control was then established on lente insulin, 35-40 units/day.

In 1961 she omitted insulin and became thirsty; a random blood-sugar level was 373 mg./100 ml. She re-started insulin, 50 units daily, with reasonable control; urine sugar was around 1+, and a 2-hour post-prandial blood-sugar level was 192 mg./100 ml. A pregnancy during this year was terminated by caesarean section because of her diabetes.

In September 1962 she presented at the antenatal clinic. There was some doubt about the last menstrual period but the size of the uterus indicated a 12-14 week pregnancy. She was still moderately obese (weight 167 lb.); BP was 120/70 mm.Hg; there was no oedema. Her diabetes was now well controlled on 50 units lente insulin/day.

She attended regularly at the antenatal clinic, during which time twins were diagnosed. Her urine showed the presence of glucose on occasions. She was admitted to the ward at 32 weeks' gestation, where she was found to be aglycosuric and suffering from hypoglycaemic reactions. She was placed on a 1,500 calorie diet with soluble insulin in accordance with her urine tests. However, it soon became apparent that no insulin was required and random blood-sugar levels were normal. Consequently, a full and free diet was allowed including sugar, sweets, cake and so on. Serial glucose-tolerance tests were then undertaken, the results of which were virtually normal as shown in Fig. I and Table I. Further random blood-sugar levels were all low. The cortisone augmented glucose tolerance was only mildly abnormal by non-pregnant standards.<sup>1</sup> Fasting plasma insulin-like activity

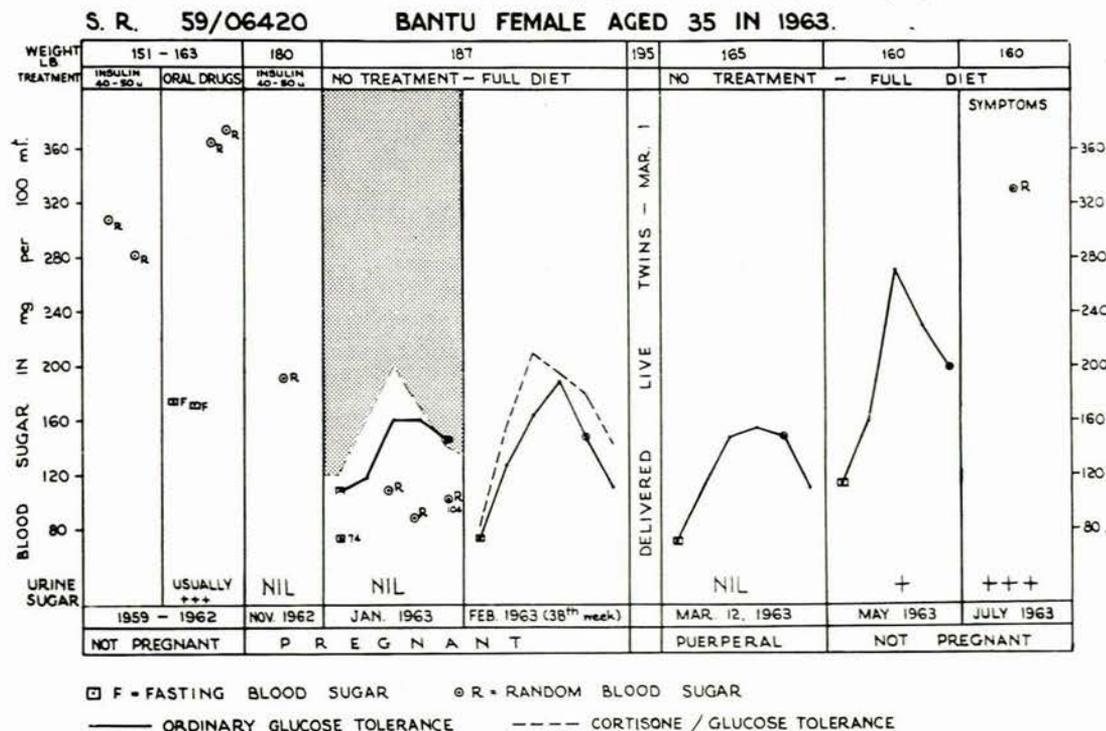


Fig. 1. The glucose-tolerance curves show blood-sugar levels fasting and 1/2-hourly after 50 G of glucose. The small circles on the curves indicate the 2-hour levels.

(ILA) at 38 weeks was 880 micro-units/ml. by a fat pad method. It should be noted that her weight had increased by 20 lb. during the pregnancy.

In view of her diabetic history, previous caesarean section and the presence of twins (she and her husband also requested sterilization), a lower segment caesarean section and bilateral Pomeroy-type of sterilization was performed at 38 weeks gestation on 1 March 1963. Both babies responded immediately to resuscitation and their birth-weights were 5 lb. 1 oz. and 5 lb. 0 oz. There was no evidence of congenital abnormality in either baby.

TABLE I. GLUCOSE-TOLERANCE TESTS\*

Date	During last pregnancy			Twin birth	Postpartum
	22.2.63	26.2.63	27.2.63		
Type	50 G of glucose orally	50 G of glucose orally	Oral 50 G of glucose + cortisone	50 G of glucose orally	50 G of glucose orally
Fasting blood sugar	107	74	82	70	113
After ½ hour	117	126	156	110	159
After 1 hour	160	162	209	146	272
After 1½ hours	160	158	194	154	232
After 2 hours	144	144	178	146	199
After 2½ hours	—	110	131	111	—

\*Blood-sugar estimations were performed on capillary blood according to the Hagedorn-Jensen method.

Glucose tolerance on the twelfth puerperal day was still normal. However, asymptomatic carbohydrate intolerance returned in May, three months postpartum, and insulin again became necessary in July (see Fig. 1 and Table I). Fasting plasma ILA was now 335 micro-units/ml.

#### DISCUSSION

Insulin requirements vary considerably during pregnancy. During the first trimester careful adjustments may be necessary because of vomiting of pregnancy and lack

of eating. Insulin requirements may decrease during the second trimester and again doses have to be altered. Renal glycosuria will add to the hazards of control if urine sugar alone is used as the basis for gauging the doses of insulin. In the third trimester doses usually have to be increased.<sup>2</sup> The underlying changes necessitating these alterations in insulin dosage have not been accurately assessed.

The patient under discussion was a moderately severe metabolic diabetic before her last pregnancy commenced. Yet during the course of this pregnancy her glucose intolerance disappeared completely—only to recur within 3 months after delivery. The logical conclusion is that the remission was induced by the presence of the foeto-placental axis. The mechanism of this unusual occurrence is pure speculation at this stage of our knowledge. The literature, as far as we know, does not include a similar case, though it is known that the insulin requirements may decrease appreciably in a small proportion of pregnant diabetics, assessed at 8% in one series.<sup>3</sup>

#### SUMMARY

1. The case of an insulin-requiring woman whose diabetes underwent complete remission during pregnancy is described.

2. The diabetic state recurred within three months after the birth of her twin babies.

3. This is a very rare phenomenon for which there is no reasonable explanation at this stage of our knowledge.

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