

DIABETES MELLITUS WITH PREGNANCY

by

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Introduction

Although in western countries the subjects like diabetes mellitus and heart disease with pregnancy, placental insufficiency, postmaturity etc. are in the limelight of clinical and experimental research we in India are still struggling with formidable problems of anaemia, malnutrition, parasitic and infectious diseases during pregnancy and malpresentations in labour. This reflects no lack of genuine interest on our part in those subjects but a comparative urgency of our immediate problems.

Diabetes mellitus together with obesity is more common among the rich and in economically advanced countries. Free hospitals like ours which look after the needs of poor class of patients have to deal with less number of diabetics.

Material

From 1st January 1959 to 31st July

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1965 there were 30 viable pregnancies in 28 diabetic patients at the Obstetric department of the K.E.M. Hospital, Bombay, two patients being treated in their two successive pregnancies. These cases were managed by obstetricians with the help of physicians. Out of these 28 patients, 2 cases were unregistered and failed to have antenatal care, the rest of them having had complete antenatal management. The unregistered cases were responsible for maternal mortality and morbidity as well as for raising the perinatal mortality in this series.

Results

Incidence: During the same period we had 16,622 confinements, thus giving the incidence of diabetic pregnancies as 1:642. This incidence is quite low as compared to 1:50 given by Oakley and Peel. At Queen Charlotte's Hospital in ten years period, from 1944 to 1953, the incidence was 1:2000 (Lewis, 1964), the low incidence being due to the fact that there is no diabetic clinic at that hospital.

Age incidence: The maximum number of our patients was above the age of 30 years compared to our other obstetric cases, the majority of

whom were in 20 to 30 years age group.

Past obstetric history: Table 1 reflects the high incidence of foetal wastage in diabetic gravidae in their past obstetric performance. This is similar to the figures given by Peel (1962) and Hagbard (1958). This high perinatal mortality is due to the presence of prediabetes or altered carbohydrate metabolism which precedes overt diabetes for a variable period.

TABLE I
Past Obstetric History

Total number of conceptions in 28 diabetic gravidae	..	..	..	110
Normal confinements	..	..	..	63
Abortions	..	..	..	16
Stillbirths	..	..	..	31
Abnormal confinements	..	..	..	47

Insulin requirements and foetal survival: In Table 2 we have classified cases according to the daily dose of insulin into three groups and compared the foetal salvage. Out of 30 diabetics, 27 patients were regular insulin takers leaving 2 emergency cases and 1 case of White's class A diabetes who was not kept on insulin. This table shows that foetal loss does not increase with increasing daily insulin requirements. The foetal survival depends upon meticulous care of pregnant diabetic patients during

pregnancy and labour. This is also stressed by many authorities.

TABLE II
Insulin Requirement and Foetal Survival

Daily Insulin requirement	Cases	Foetal Survival
0 - 20 units	9	8
21 - 49 units	7	6
50 units and over	11	9

Complications of pregnancy: Table 3 shows the complications during pregnancy. The low incidence of hydramnios in our cases may be due to the fact that mild degrees of hydramnios without pressure symptoms were not recorded. Oakley and Peel state that some degree of hydramnios was always present in their cases. McLendon and Bottomy (1960) give a lower incidence of this complication.

Nature of delivery: In the present series there were 12 cases who had spontaneous deliveries, while in 8 patients labour was induced prematurely. Induction was done by rupture of forewaters followed by intravenous pitocin drip. Seven patients delivered vaginally following induction but one case developed uterine inertia and was subjected to caesarean section.

There were 8 caesarean sections performed. The indications were, his-

TABLE III
Complications of Pregnancy

	Present series		Oakley & Peel (1949)	McLendon & Bottomy (1960)
	No.	%		
Hydraminos	1	3.3	30.0%	5%
Pre-eclampsia	5	16.0	18.9%	13%

tory of previous section for cephalopelvic disproportion in 2 cases, in 5 cases there was cephalo-pelvic disproportion and failure of induction of labour in 1 case. Intra-amniotic hypertonic saline infusion was done in 1 patient. She was 30 weeks' pregnant with intra-uterine foetal death. She delivered a dead foetus, within 24 hours.

Foetal outcome: As shown in Table 4, out of 30 viable pregnancies, there were 7 perinatal deaths giving the incidence of 23.3%. John Peel was able to improve upon perinatal mortality, from 23.8% in 1957 to 13.4% in the year 1961 by routinely admitting all patients to hospital at 30 to 32 weeks of pregnancy for meticulous control of diabetes and for close observation.

TABLE IV
Foetal Outcome

Intra-uterine death of foetus	..	..	4
Neonatal deaths	..	..	3
Normal babies	..	..	23
Perinatal mortality:			
Peel (1962)—1953-1957	..	..	23.8%
1958-1961	..	..	13.4%
Pedersen and Brandstrup (1956)	..	..	10.0%
Present series	..	..	23.3%

Maternal mortality and morbidity: One patient was admitted late in labour, with absent foetal heart sounds, as a transferred case. The baby was delivered by low midcavity forceps but there was difficulty in delivering the shoulders of this large sized baby. During the manipulations there was tear in the lower segment of the uterus. Exploratory laparotomy was done and the tear was sutured. After some days patient developed a vesico-

vaginal fistula. The fistula was closed by vaginal repair six weeks later.

There was one maternal death. This patient was a case of severe diabetes, who, after registering her name during the fifth month of pregnancy, did not report for 3 months. During this period she did not take any treatment. This patient had cirrhosis of the liver which we noticed later. When she came in the 8th month as an emergency admission, the foetus was already dead inside the uterus. She was delivered by injecting intra-amniotic hypertonic saline. After delivery she developed hepatic coma and died.

Discussion

In this series incidence of diabetes mellitus with pregnancy is lower than that of others, while there were no cases of prediabetes. The bad obstetric history (B.O.H.) clinic is newly opened in our obstetric department to investigate cases of abortions, stillbirths and neonatal deaths, and we expect to get more cases of prediabetes in future.

Priscilla White (1952) tried hormonal treatment by oestrogen for all pregnant diabetic women with a view to reduce the incidence of pre-eclampsia and increase foetal salvage. She classified the cases according to the age at the time of onset of disease, duration of disease and presence of vascular lesions. The foetal loss increases in the presence of vascular lesions. The number of cases in our series is too small to draw any conclusion.

Pedowitz and Shlevin (1964) have recently suggested a newer classification which is better than White's, of

which it is a modification. They noted that with the presence of atherosclerosis especially of pelvic vessels the foetal loss increases and so also maternal risks rise. They advise classification based on absence or presence of degenerative vascular changes into "Favourable" and "Unfavourable" groups respectively. By these criteria all our cases fall in the "Favourable" group.

At our clinic the patient was seen weekly throughout pregnancy. Glucose tolerance tests and ophthalmic examinations were done repeatedly. The patients were instructed to examine urine daily at given times and results were scrutinised at antenatal visits. The diet was adjusted according to body weight.

At antenatal visits when there was excessive gain in weight the diet was curtailed. Early signs of toxæmia and hydramnios were looked for and the patient was hospitalised immediately and treated with salt restriction, bed rest and thiazide group of diuretics.

Insulin: Except in mildest cases all required insulin therapy. Lente insulin was found satisfactory with addition of small doses of soluble insulin in the evening in some cases. The severe cases were kept on the soluble insulin, morning and evening. No case was kept on oral anti-diabetic drug as the control becomes difficult. The insulin dose was adjusted according to blood and urine sugar levels. In pregnancy insulin requirement rises above pre-pregnant levels and after delivery it suddenly drops to previous levels, this being due to diabetogenic action of pregnancy.

Ketosis: None of our patients went into precoma or diabetic coma but

they might have had occasional ketosis which was difficult to detect. Some of the cases with intra-uterine foetal deaths might have had ketosis but this could not be confirmed.

Induction of labour and caesarean section were done frequently but routine termination of pregnancy at 38 weeks was not practised, because patients often did not know their correct menstrual dates and care of premature baby is yet far from ideal.

Caesarean section: Plain x-ray of abdomen was taken prior to section to exclude foetal skeletal malformation and to confirm foetal maturity. On the day of operation patient was given 5% glucose intravenous drip and crystalline insulin added to drip bottle calculated as 1 unit per 2 gms. glucose. Spinal anaesthesia was given for all our cases of caesarean sections.

Vaginal delivery: During labour oral feeds were withheld if there was vomiting and intravenous glucose drip with insulin were given. Urine was checked half hourly, particularly for acetone. After delivery the insulin requirements dropped suddenly so dose of insulin was appropriately reduced after testing urine for sugar and acetone repeatedly. During the first 2 days puerperal patients were given short acting insulin repeatedly after checking urine picture.

Newborn: Aspiration of gastric contents of the newborn was done, because this can reduce incidence of hyaline membrane disease. Improvement in neonatal salvage depends upon efficient care just like a premature child whatever the birth weight.

The ideal one should strive to

achieve today is perinatal mortality in the region of 10 to 15 per cent, without a maternal death. The successful management of a case depends upon (1) antenatal care, (2) delivery 2-3 weeks prior to term and (3) treatment of the newborn as a premature.

The patient, obstetrician, physician and paediatrician should co-operate to reduce the foetal loss to the minimum. The control of diabetes is difficult without the patient's co-operation.

Congenital malformations: Oakley and Peel (1949) found serious congenital anomalies in 6.3% of cases. McLendon and Bottomy (1960) found these is only 2 out of 170. The cause for the increase in incidence is not known. In our series there was no obvious malformation but in the absence of an autopsy this cannot be confirmed.

Summary

(1) A series of 30 pregnancies in diabetic patients is presented.

(2) Importance of meticulous care of diabetes in pregnancy and labour is stressed.

(3) Patient's education of her disease and her co-operation is vital.

(4) Importance of early delivery prior to full-term is pointed out.

(5) The perinatal mortality was 23.3 per cent.

(6) There was one maternal death. She had also cirrhosis of liver and died of hepatic coma after delivery.

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