MANAGEMENT OF DIABETES IN PREGNANCY

by

M. D. ADATIA, M.D., F.C.P.S., F.I.C.S., B.Sc., D.G.O.

and

SHARDA M. ADATIA, M.D., D.G.O.

Management of diabetes in pregnancy should be properly planned and clearly worked out to obtain good results.

There are two major categories of patients, (i) those who develop diabetes during pregnancy and (ii) those who have diabetes existing before becoming pregnant. In this series, only cases who had diabetes before pregnancy were taken into consideration.

In the management of 80 patients delivered over a period of 10 years, a careful and meticulous study of each patient was carried out by performing glucose tolerance test in each trimester. The routine procedure for testing was two hour oral glucose tolerance test. Ten patients had delivered twice and one patient had delivered three times.

Out of a total of 5020 deliveries in a period of 10 years, 80 cases were observed to be confirmed cases of diabetes mellitus, giving an incidence of 1.6 per cent. The incidence as reported by Peel is 1:50.

Age incidence

The maximum number of patients in this study was between the ages of 25 to 35 years. (Fig. 1).

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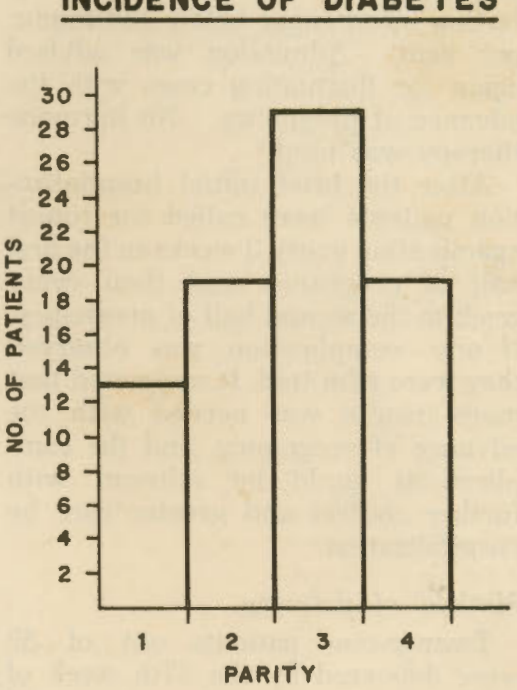

Fig. 1

Parity

Majority of patients were second, third or fourth parae.

Control of diabetes

In all patients under observation rigorous control of diabetes was carried out. Initially, patients were controlled by restriction of sugar, and by insulin or oral hypoglycaemic

drugs. In milder cases insulin was dropped after careful control, while severe cases, with bad obstetric history, were kept on insulin throughout the course of pregnancy. Oral anti-diabetic drugs used were mainly Diabenese and Rastinon tablets.

All diabetics, as far as possible, were admitted for one or two weeks between the 3rd and 4th month of pregnancy for the stabilization of fasting blood sugar below 130 mgms. per cent. Admission was advised again for fluctuating cases with the advance of pregnancy. No hormone therapy was used.

After the brief initial hospitalization patients were called for repeat examination every 3 weeks in the first half of pregnancy and then every week in the second half of pregnancy. If any complication was observed they were admitted. It was noted that more insulin was needed with the advance of pregnancy, and the complications could be relieved with further control and greater care by hospitalization.

Method of delivery

Twenty-two patients out of 80 were delivered by the 37th week of pregnancy by caesarean section and 58 delivered spontaneously. These 22 patients were multiparous, had bad obstetric history and six of them had toxaemia off and on during the period of observation. None of them had hydramnios, while eight of them had large size babies weighing more than 8 lbs. These cases were admitted to the ward before two weeks until delivery and they were kept in bed for 20 hours out of 24 hours daily. Rest of the patients were allowed to deliver spontaneously.

These patients were not given trial by induction with rupture of membranes, to avoid chances of neonatal infection. The risk of these delicate and premature babies standing or tolerating vaginal labour was also thus avoided.

Out of 58 patients who delivered spontaneously, 9 delivered prematurely and 25 had babies weighing more than 8 lbs.

Management of labour and caesarean section

To avoid hypoglycaemia and ketosis, intravenous glucose, 10%, 100 c.c., was given by continuous drip and small doses of insulin were given at intervals.

The anaesthetic of choice used in these cases was spinal.

Complications

Complications of pregnancy were noticed in 32 cases as tabulated below. Twenty-six patients had vulvo-vaginitis, 12 pyelitis, 8 came with pre-eclampsia and only 3 cases of hydramnios were noticed. The commonest complication was vulvo-vaginitis.

Foetal wastage

The incidence of foetal wastage was noted to be very high. Out of a total of 214 confinements of diabetic patients, 51 were stillbirths and 43 were cases of abortion. (Fig. 2).

Care of newborn

The newborn was treated as if it was premature and was handled very gently.

CONCEPTIONS

NO. OF PATIENTS	PARITY	CONCEPTIONS	STILL BIRTHS	ABORTIONS
13	1st	13	2	0
19	2nd	38	11	4
29	3rd	87	19	23
19	4th	76	19	16
80		214	51	43

Fig. 2

Postural drainage by keeping the baby in a lowered head position soon after birth was practised to avoid regurgitation and inhalation of fluid. Aspiration of gastric contents with a catheter was done in several cases.

Oxygen was given continuously for the first few hours and the child was kept in a warm cradle or kept in an incubator.

Glucose water by mouth was given for the first two days, but regular feeding was avoided for 24 to 36 hours, until oedema due to fluid retention had subsided.

Great care was taken to avoid infection and if temperature was noted, antibiotics were given.

Puerperium

Prevention of infection and use of proper antibiotics, whenever necessary, was considered to be of primary importance. Insulin dosage had to be readjusted during this period. Whenever possible breast feeding was not avoided, but was carefully undertaken.

Maternal mortality

With proper control of diet, hypoglycaemic drugs and judicious use of insulin, the risk to the mother is very much reduced. In the present series not a single patient died.

Perinatal mortality

Frequent check-ups during antenatal period, maintenance of normal level of blood sugar, avoidance of ketosis and reduction of toxaemia has improved the outcome to a great extent.

In this group of 80 patients, the overall perinatal mortality was 14% (12 children died). Amongst 58 patients who required no special obstetric treatment and had spontaneous labour, the perinatal mortality was 15.5% (9 children died). However, among the 22 patients who had caesarean section, the perinatal mortality was 13.6% (3 children died).

Perinatal mortality

Total No. of patients	Perinatal Mortality	Percentage
80	12	14

Patients requiring no special obstetric interference

No. of patients	Total No. of deaths	Percentage
58	9	15.5

In cases having spontaneous delivery, three were stillbirths and 6 died within a week. Out of them 2 died of pneumonia, and one had repeated cyanotic attacks due to congenital heart disease, and 3 died of prematurity.

Patients delivered by caesarean section

No. of patients	No. of foetal deaths	Percentage
22	3	13.6

Out of 3 foetal deaths in caesarean babies one died of cyanotic attacks and two died of pneumonia.

Foetal survival depended more upon the duration of pregnancy when patient was first brought under control and upon adjustment of insulin during the course of pregnancy.

The earlier in pregnancy the insulin control of diabetes was obtained the better was the outlook for foetus, and if there was an increase in the dose of insulin from one trimester to the next by more than 20 units the foetal survival rate fell.

Malformations

Out of 80 cases, six babies showed serious malformations. This gave an incidence of malformations, 8%. Two had heart disease with club feet, one had heart disease with cleft palate and hare lip, two had hydrocephalus with club feet and one was anencephalic.

Malformations

Total No. of Cases	No. of babies	Percentage	Hare lip with cleft palate	Heart disease	Anence-phalic	Club feet	Hydro-cephalus
80	6	8	1	3	1	4	2

Of the stillbirths, two had hydrocephalus with club feet and one was anencephalic. Amongst the live born children, three had congenital heart disease, four had club feet and one had hare lip with cleft palate.

Of the caesarean babies, only one had heart disease with cleft palate and hare lip, while the rest of the malformations were in patients who were given oral hypoglycemic drugs.

Baby Weight

Of the babies delivered by caesarean section, eight weighed more than 8 lbs., and from those delivered spontaneous, 34 babies weighed more than eight pounds at birth.

Discussion

In this series the incidence of diabetes mellitus with pregnancy is 1.6%, which is comparable with the incidence reported by other authors. The cases of pre-diabetics are not considered in this series. Only confirmed cases of diabetes mellitus were taken into consideration.

The patients were seen repeatedly throughout pregnancy and glucose tolerance tests were done frequently. The diet and drugs were adjusted according to body weight and sugar level in blood.

At the antenatal visits, when there was excessive gain of weight, the diet was curtailed. Vulvitis, early signs of toxaemia and hydramnios were looked for and patients hospitalized immediately and treated.

Insulin was used in severe cases who had bad obstetric history and complications. Oral antidiabetic drugs were given to mild cases. No hormones were used. None of the cases went into coma or ketosis.

It is generally understood that oral antidiabetics are unreliable and the

blood sugar cannot be controlled as satisfactorily as it can be done by administration of insulin. But, in our series, often due to practical difficulties of getting adequate and regular facilities for administration of injections, 58 cases were satisfactorily controlled with Diabenese, Rastinon or DBI tablets. In some cases they were given in combination. Over-all results of complications and perinatal mortality have remained satisfactorily low.

Risk to the foetus was avoided by doing caesarean section routinely in cases with bad obstetric history, fluctuating sugar level and unfavourable obstetric conditions.

With the administration of antibiotics and proper aseptic care, no postoperative complications were noted.

In all severe cases fundal examination was routinely done.

Incidence of malformations was 8% in our series. Only one case of anencephaly and one of hydrocephalus was diagnosed during the antenatal period.

In spite of rigid control and meticulous care, no remarkable reduction could be obtained in its incidence.

In pre-insulin days, the perinatal mortality was 50%. Half of them died in utero, 25% of them during labour and 25% after labour (Ian Donald). The maternal mortality was 20 per cent and it used to rise during the last six weeks. The fertility rate also used to be 1 to 2% which has now been increased to 25 to 30% (Ian Donald) and maternal mortality which used to be more than 25% has been reduced to less than 1% (Peel and Oakley) (White).

The complications of uncontrolled diabetes continued to be high and the perinatal mortality was as much as 36% in a comparable group of patients in the previous five years at this clinic when the present rigorous control of diabetes and free use of caesarean section was not practised.

The fundamental factors in the success of this programme are the degree of enthusiasm, interest and co-operation exhibited by the team of physicians interested in diabetes, resident doctor, obstetrician and paediatrician in managing these patients.

Summary

i A series of 80 pregnancies in diabetic patients is presented.

ii. Importance of meticulous care of diabetes in pregnancy and labour is emphasized.

iii. Patients should be properly motivated and co-operation is of vital importance.

iv. Importance of early delivery prior to full term is pointed out.

v. The perinatal mortality was 14%.

vi. There was no maternal death.

References

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