

## PREGNANCY ASSOCIATED WITH DIABETES MELLITUS

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Growing awareness of outcome of diabetes associated with pregnancy has made the Obstetrician alert in the selection of cases with a suggestive history in an endeavour to uncover gestational diabetes.

Pregnancy acting as a stress can unmask latent diabetes. The disease not only adds to maternal risks but gravely jeopardises the foetus.

During a 6 year period from 1972 to 1977 there were 71 cases of pregnancy associated with diabetes admitted in the Lady Hardinge Medical College and Smt. Sucheta Kriplani Hospital, New Delhi. During this period there were 68,134 obstetrical admissions giving an incidence of 1:960. Saraf *et al* (1967) gave any incidence of 1:642 while Gun and Chakraborty (1976) quoted an incidence of 1:1250. Of the maternal diabetics 56 delivered in the above hospital as against a total of 38,085 deliveries giving a ratio of 1:680 deliveries.

Of these 71 diabetics, 29 were known cases while 42 (59.2%) were diagnosed

during their current pregnancy and classified as gestational.

**Age:** The age distribution varied from 15-45 years with 46.5% being between 20-30 years and the majority 28.2% between 25-30 years. Only 2.8% were below 20 and above 40 years. In the series of Saraf *et al* (1967) the maximum were over 30 years.

**Parity:** The majority, 53.6% had 1 or 2 earlier pregnancies while 1.4% had 5 or more.

**Duration:** In the known diabetics the average duration of the disease was 6.2 years with 23 having had diabetes for 1-10 years and 2 for over 10 years. Two were of unknown duration.

**Antenatal Attendance:** Just over one third were booked, whereas 42.3% were emergency admissions and those who often came in labour or just prior to it. After admission, 31.0% left against medical advice; of these 9.9% (7) returned during labour or just prior to it. This meant that antenatal care could be given only to 36.6% while in 63.4% a patient responsibility was noted. This had repercussion on the outcome, where in those who left and returned in labour the loss was 71.4%.

**Complications:** In the majority, diabetes was of mild degree. A severe form with a blood sugar level of over 160 mg.% was found in 40%. There were 21.8% who

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showed some form of diabetic retinitis which was three times higher in the known diabetics (34.5%) as compared to the gestational ones (11.1%).

*Hydramnios* was present in 36.6%. Here, however, it was found more in the gestational group (43.2%) as compared to 27.6% among the known diabetics. As against 20% found by Gun and Chakraborty (1976), hypertension and or pre-eclampsia were found in 15.5%. Gestational diabetes was found in 42 cases. These were identified preliminarily either by a positive sugar reducing urine test in the antenatal clinic or by a bad obstetrical history. These were then investigated with fasting and post lunch blood sugar levels and with a glucose tolerance test. A bad obstetrical history was given in 41 i.e. 57.7%, the incidence being almost equal in both groups i.e. known and gestational.

*Previous Obstetrical history:* Seventy-one diabetics had 231 prior pregnancies. Of these only 54.5% terminated in live births with 9.5% having early neonatal deaths during the first week of life. The rest terminated as abortions or stillbirths. A comparative study between the known diabetics and the gestational diabetics showed that there were more live births (61%) in the latter group while abortions occurred more in the former, 28.4%

as compared to 12.2% in the gestational group.

The distribution of earlier foetal losses showed that 18.3% had 2 prior losses, 15.5% had 3, while 5.6% had 4 or more. A history of congenital abnormalities was given by 2.8% and that of large babies by 26.7%.

There were no maternal deaths.

*Foetal Outcome:* Excluding abortions there were 19 foetal losses. There were almost equally divided between early neonatal deaths and still births.

*Severity of the Diabetes:* Correlation with severity of diabetes showed that as against 90.5% live births in the mild group, only 72.4% of severe cases gave birth to live babies. All the fresh and 66.7% of the macerated stillbirths occurred in this severe group. The severity of diabetes could be correlated with a total stillbirth rate of 27.6% in the severe as against 9.5% in the mild. It was noticed that 57.1% of the mild as against 41.4% of the severe group received antenatal supervision.

*Mode of Delivery:* Of 71 patients, 4 had abortions, 15 left against advice and did not return, another 7 left against advice and came back in labour or just prior to it. Of the 52 who delivered in the hospital 63.4% had vaginal deliveries and 36.5% had caesarian sections.

TABLE I  
*Previous Obstetrical History*

Pregnancy outcome	Known diabetes		Gestational diabetes		Total	
	Preg.	%	Preg.	%	Preg.	%
Live Birth	56	48.3	70	60.9	126	54.5
Early neonatal death	11	9.5	11	9.6	22	9.5
Abortion	33	28.4	14	12.2	47	20.3
Still birth	16	13.8	20	17.4	36	15.6
Total:	116	100.0	115	100.0	231	99.9

TABLE II  
Outcome

Vaginal (33)		C.S. (19)		Foetal loss	%
Vaginal spontaneous	Successful Inductions pre-term	Caesarean	Section		
		Elective. Following and failed induction			
19				13	68.4
	14			2	14.3
		15		3	20
			4	1	25

Among these 33 vaginal deliveries, 14 (42.5%) were induced at 37-39 weeks. All had live babies with 2 neonatal deaths (14.3%). The other 19 i.e. 57.5% came in labour or delivered spontaneously. Among these 47.4% had intrauterine deaths or fresh stillbirths and 4 had neonatal deaths giving a loss of 68.4% which is 5 times more than those who had a preterm induction.

Of these 77% were at term when they delivered.

Lower segment caesarean section was performed in 19 (36.5%) with a perinatal loss of 21%. Of these 19 cases, 15 were elective and resulted in 86.6% live birth with 1 neonatal death; 4 Sections were performed after failed induction with 1 neonatal death.

The perinatal loss following caesarean section of 21.1% included 2 stillbirths (caesarean done for obstetric indications) and 2 early neonatal deaths, 1 with respiratory distress syndrome following intrauterine growth retardation and foetal distress, and 1 in whom diabetes was not controllable.

Congenital abnormalities were found in 5.7%.

**Weight:** Babies over 8 lbs were found in 17 cases and the severity of the disease played a significant role here. Among the known diabetics, 70% of the severe cases

had large babies as compared to 20% in the mild. In the gestational group the incidence of large babies was 40% in the severe cases.

**Perinatal Mortality:** The gross perinatal loss was 19 i.e. 36.5% or 365 per 1000 births. Of these 68.4% (13) were emergency admissions and 31.6% (6) were booked cases.

These 19 losses showed a marked correlation in 80% with a bad obstetrical history, 45.7% with hypertension or pre-eclampsia (43% showing changes in their fundi), 19% each with severe diabetes, hydramnios, intrauterine death with congenital abnormalities, and 2 with premature labour.

Hence perinatal loss corrected for congenital abnormalities and prematurity was 30.8% or 308 per 1000 births.

Of the perinatal deaths, 8 were early neonatal deaths, 11 were stillbirths—7 macerated and 4 fresh.

Of the overall perinatal losses the incidence in gestational diabetics was half that in the known group. Whereas the early neonatal deaths were almost equal in the both groups, in the known diabetics the incidence of intrauterine deaths and stillbirths was almost 4 times i.e. 27.5% as compared to 7.1% in the gestational group.

**Stillbirths:** Of the pregnancies terminating in stillbirths emergency admissions or patients returning in labour after going against medical advice was 72.7%. This weighed the scales very heavy against patients who seemed irresponsible in their antenatal attendance and came too late for control. Two cases with stillbirths, both booked, required caesarean sections for obstetrical reasons and in a third a booked case, who was to be electively sectioned at the end of 37 weeks the foetal heart suddenly disappeared.

Among 8 early neonatal deaths 75% were emergency admissions. Lung complications, asphyxia neonatorum, cord prolapse and prematurity, played a significant role.

#### *Discussion*

The change in the fertility pattern of the diabetics with the introduction of insulin is well known. Emerging now is the importance of a high index of suspicion on part of the obstetrician to enable one to pick up gestational diabetes from the antenatal clinic on the basis of bad obstetrical histories. In this series 57.7% had such histories with a high foetal wastage in previous pregnancy with 5.6% having 4 or more foetal losses. Thus screening is essential and should form part of the routine in antenatal care.

In the management, early admission around 32 weeks in severe cases or in cases complicated with hypertension, hydramnios and bad obstetrical history is mandatory for stabilisation. Hydramnios was found in 36.6%. Hypertension and/or pre-eclampsia was found in 15.5% cases.

Soluble insulin mixed with long acting rather than oral antidiabetic agents was used routinely in the hospital.

In this study, termination of pregnancy prior to term and mode of delivery played a significant role. Vaginal delivery at 37-39 weeks had the best outcome.

The termination of pregnancy between 37-39 weeks resulted in live babies in 100% with a perinatal loss of 14.3% in those who delivered vaginally and in 86.6% of those who were sectioned either electively or after failed induction with a perinatal loss of 20%. This has an important bearing as there was a foetal loss of 68.2% in those who had spontaneous deliveries and of these, 77% had reached term when they came in labour.

In 1 case the foetal heart disappeared the day before the patient was to be electively sectioned. This patient was subsequently, in 1978, sectioned at the end of 37 weeks resulting in a live baby.

Caesarean section was performed in 36.5% cases with a perinatal loss of 21%. Dhirawani (1973) had a caesarean section rate of 22.5% while Adatia and Adatia (1968) had 27.5%. Antenatal care was availed of only in 36.6%. The emergency admission rate was 42.3% including 9.9% who left against advice and returned only in labour often with absent foetal heart sounds. Associated with emergency admission was high fetal death rate, 72.7%. Stillbirths and 75% of early neonatal deaths were found amongst these emergency admissions. The result was a high corrected perinatal mortality of 30.8%. After excluding these 13 cases the mortality in booked cases was 11.5%.

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