HIGH RISK FACTORS ASSOCIATED WITH IMPAIRED GLUCOSE TOLERANCE DURING PREGNANCY

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SUMMARY

Impaired glucose tolerance during pregnancy is favoured by a positive family history and a poor past obstetric performance. Certain complications occurring during pregnancy also help in identifyin this potentially high-risk situation. This condition must be identified in time to prevent recurrence of previous obstetric complications and to obtain an optimum fetal outcome during the current pregnancy.

Introduction

Detection of impaired glucose tolerance (IGT) during pregnancy is an important challenge facing the obstetrician. If not identified, it can give rise to various maternal and fetal complications. However, certain criteria can help in identifying these women at risk. Therefore, the present study was undertaken to analyse the various risk factors in a pregnant woman which may be present in association with impaired glucose tolerance.

Material and Method

All patients attending antenatal clinic were screened for presence of high-risk factors. This included cases with positive family history, poor past obsteric performance including abortions, stillbirths, neonatal deaths, fetal macrosomia and congenital malformations. Patients developing hypertensive disease, hydramnios, glycosuria or vulvo-vaginitis during pregnancy or whenever there was antenatal suspicion of big baby were also included. Three cases were diagnosed post partum after birth of large for date babies.

A definite clinical protocol (Fig. 1) was followed and patients with positive risk factors were screened on first prenatal visit and subsequently at 24 and 32 weeks or whenever any risk factors developed during pregnancy. If any of the risk criteria was present, fasting and post prandial blood sugars were tested. If sugar levels were abnormal, a standard three hour 100 g oral glucose tolerance test (OGTT) was done and criteria for abnormal were those of O'sullivan and Mahan (1964) i.e. two or more blood

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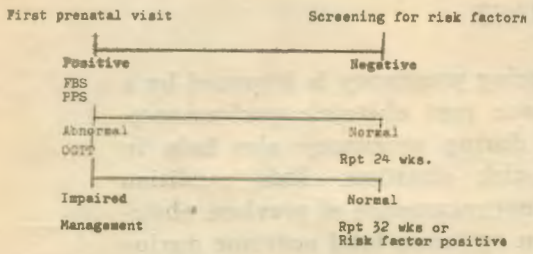
glucose values equal to or in excess of 90, 165, 145, 125 mg% at fasting, 1, 2 and 3 hours after glucose load respectively.

During period 1976-82 a total of 55 cases were diagnosed to have impaired glucose tolerance during their current pregnancy because of presence of one or more of these risk factors. The study analyses their profile in detail.

Fig. 1



FBS–Fasting blood sugar
PPS–Post prandial sugar
OGTT–Oral glucose tolerance test

Results

Abnormal OGTT was detected in 11 (20%), 16 (29%) and 25 (45.5%) cases respectively during first, second and third trimesters of pregnancy and 3 (5.5%) cases were diagnosed after delivery.

High-risk criteria noted in these women are listed in Table I. Two or more criteria were present in 10 (18.2%) women.

The commonest high risk criteria noted was poor past obstetric performance in 33 (60%) patients. This includes previous abortions, stillbirths, neonatal deaths and birth of big babies or malformed babies. These 55 patients have had a total of 79 pregnancies in the past with only 37 (46.8%) resulting in live babies (Table II). Twenty-three (29.1%) pregnancies ended as abortions and perinatal loss either as stillbirth or neonatal death was observed in another 19 (24%) cases. Six patients (7.6%) have had large for date babies in the past and 4 (5.1%) congenitally malformed babies were born.

TABLE I

High Risk Factors for Impaired Glucose Tolerance

1.	Poor obstetric performance	33
	Previous abortion	13
	Previous stillbirth	7
	Previous neonatal death	7
	History of big baby	4
	Previous fetal malformations	4
2.	Positive family history	17
3.	Current pregnancy complications	12
	Suspicion of big baby	2
	Hydramnios	1
	Pre-eclamptic toxaemia	3
	Glycosuria	1
	Vulvo-vaginitis	4
	Empyema	1
4.	Post partum	
	After birth of large for date baby	3
	Two or more risk factors present	10

TABLE II

Past Obstetric Performance in Patients With IGT

	No.	%
Live babies	37	46.8
Abortions	23	29.1
Perinatal loss	19	24.0
Stillbirth	4	5.1
Neonatal death	15	18.9
Fetal macrosomia	6	7.6
Fetal malformations	4	5.1

Total pregnancies in the past 79.
Perinatal loss occurred in all malformed or big babies.

Another significant risk factor observed was positive family history of diabetes, being present in 17 (31%) cases (Table III). Out of these both parents were diabetic in 2, one parent and or sib was diabetic in 12 and second degree relations were diabetic in 3 cases.

TABLE III

Family History of Diabetes in Patients With IGT

	No.	%
Negative family history	38	69.0
One parent and/or sib diabetic	12	22.0
Both parents diabetic	2	3.6
Grand parents/uncles/aunts etc.	3	5.4
Total positive family history	17	31.0

Various antenatal complications which make a patient more prone to have impaired glucose tolerance were noted in 9 (16.3%) cases. One patient having chronic empyema had IGT and 2 cases were screened because of suspicion of big baby during pregnancy. In 3 patients screening after birth of large for date babies showed abnormal glucose tolerance.

Discussion

Various risk criteria help in identifying women who are at particular risk of developing abnormal glucose tolerance during pregnancy.

Of these the most significant risk factor is a poor past obstetric performance which includes abortions, perinatal fetal loss and birth of overweight or congenitally malformed babies. Table IV compares past obstetric performance of patients in the present series with others. Incidence of abortion varies from 15 to 33% and perinatal loss occurred in 23 to 45% cases. Since differing criteria have been used for big baby, the incidence shows a wide variation. In the present series an infant weighing >4 Kg has been taken as a big baby at birth. In our series the incidence of congenitally malformed babies was 4 (5.1%). Agarwal and Gupta (1983) noted malformations in 5.7% and Pinto *et al* (1979) in 2.8% of previous births.

Another significant risk factor is positive family history. This was present in almost 1/3rd of cases. Agarwal and Gupta (1983) noted positive history of diabetes in the family of 19.2% cases of gestational diabetes.

In 12 (21.8%) cases impaired glucose tolerance was detected following complications during current pregnancy. All women developing hydramnios, glycosuria, recurrent vulvo-vaginitis and toxaemia should be screened for IGT.

The birth of large for date baby is not only significant in the past, but if a

TABLE IV

Past Obstetric Performance in Gestational Diabetes

Author (Year)	Abortions	Perinatal loss	Big baby
Dhirawani *et al* (1978)	22.1	26.3	17.4
Gun & Chakraborty (1976)	25.1	27.1	—
Pinto *et al* (1979)	28.4	27.0	26.7
Sikdar *et al* (1980)	25.0	45.0	30.0
Agarwal & Gupta (1983)	15.5	25.0	25.0
Present series	33.9	28.2	10.7

macrosomic or large for date baby is produced during the current pregnancy also, the woman must be tested for abnormal glucose tolerance. In the present series 3 such cases were diagnosed to have IGT.

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