EFFECT OF HBA1C LEVEL ON MODE OF DELIVERY

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ABSTRACT

BACKGROUND: Perinatal outcome is related to the onset and duration of glucose intolerance. The objective of the study is to determine the effect of HbA1c on mode of delivery in Obs/Gynea department of Saidu Teaching Hospital, Swat.

MATERIAL AND METHODS: This observational & descriptive study was carried out in the Department of Obstetrics and Gynecology at Saidu Teaching Hospital, Swat, from 1st March 2015 to 29th Feb 2016. Total 313 pregnant women were included in the study, who had Gestational Diabetes or Established Diabetes.Detail history was taken regarding maternal age in years, gestational age in weeks. Abdominal examination was done for lie and presenting part of the fetus, and vaginal examination were performed. These patients were followed till the end of labour and their mode of delivery i-e; normal vaginal delivery, instrumental delivery or cesarean section was recorded. Maternal HbA1c level was done at the time of delivery and was categorized as Mild (< 6.5), Moderate (6.5-9) and severe (>9). Maternal HbA1c was measured in hospital laboratory. The numerical variables of mean HbA1c, maternal age in years and gestational age in weeks were analyzed by mean ± SD (range). Categorical variables like; grades of severity of HbA1c levels and frequency of modes of delivery were analyzed by frequency (number) and relative frequency (percentages). SPSS 20 (SPSS Inc. Chicago, Illnios, USA) was used to analyze the data.

RESULTS: The total number of patients was 313. Mean age of the study population was 27.85 ± 6.37 (43 – 15) (95% CI 28.39 – 27.30). The mean age of gestational amenorrhea, at which most of the patients presented was 38.31 ± 3.02, ranging from 41 to 29, (95%CI 38.57 – 38.5). The mean glycosylated Hemoglobin (HbA1c) was 6.9 ± 1.69 (95% CI 6.17 – 5.88). Majority of the patients had poorly controlled diabetes, i-e: 64%. In different levels of HbA1c levels, normal vaginal delivery was the pre dominant mode of delivery.

CONCLUSION: In patients with uncontrolled diabetes the rate of complications increased and so does the rate of macrosomia and fetal distress, leading to higher rate of cesarean section and instrumental delivery, so by strict control of the blood sugar levels in a diabetic patient one can reduce the risk of operative deliveries and complications.

KEY WORDS: Hba1c levels, Mode of delivery, cesarean section.

INTRODUCTION:

Diabetes is a syndrome in which environmental and hereditary factors interacts leading to inadequate insulin action, causing high sugar levels in patients[1]. These patients mostly complain of increase thirst, increase in urinary frequency, increase in food intake and some time may present with weight loss[1,2].

Abnormal maternal glucose regulation occurs in 3-10% of pregnancies, and gestational diabetes mellitus (GDM), which is defined as glucose intolerance of variable degree with onset or first recognition during pregnancy, accounts for 90% of cases of diabetes mellitus[3]. However, the rising prevalence of diabetes mellitus—21 million people (7% of the population) have some form of diagnosed diabetes[3]; another 6 million people may be undiagnosed—particularly type 2 among women of childbearing age in the United States, has resulted in increasing numbers of pregnant women with preexisting diabetes[4]. Currently, type 2 diabetes mellitus accounts for 8% of cases of diabetes mellitus in pregnancy, and preexisting diabetes mellitus now affects 1% of all pregnancies[5].

It is generally classified in to Type-I diabetes ,Type II diabetes and Gestational Diabetes.It can have a much higher incidence in certain

minority populations with a greater predisposition to diabetes. The prevalence of DM among in child bearing age is increasing due to sedentary life styles and change in diet[6]. More than 10% of adult population in Pakistan suffers from D.M. GDM in Pakistani women is comparable to Western counterparts but complications rates are higher possibly due to poor glycemic control[7]. Expert committees for obstetricians and diabetes specialists have recommended. screening for GDM at around 24 – 28 weeks of gestation[8].

Perinatal outcome is related to the onset and duration of glucose intolerance[9]. Hyperglycemia induced teratogenicity occurs almost exclusively in pregestational diabetes. Reduced insulin activity in pregnant diabetic women leads metabolically abnormal environment as a result birth defects and spontaneous abortions occurs in sixth and seventh week of gestation, and diabetic fetopathy predominantly macrosomia and fetal hyper insulinemia occurs in second and third trimesters[10,11]. Despite of improvements in the overall outcome of diabetic pregnancies the rate of congenital abnormalities has not changed in recent years and perinatal mortality remains 3 to 5 times higher than normal population[12,13]. Infants of diabetic mothers (IDM's) have double the risk of serious birth injuries, triple the likelihood of cesarean delivery, quadruple the incidence of new born intensive care unit admission[14] Treatment of diabetes in pregnant women should be aimed at achieving HbA1c levels within normal range i.e.<6.0%[15].

It is stressed that more large studies are needed in our community. Normoglycemia with exercise, diet, control, prepregnancy planning good prenatal care, early screening, fetal surveillance during pregnancy, advances in neonatal care and management of diabetic women by multidisciplinary approach, glycemic control right from conception to delivery can improve the outcomes.

MATERIAL AND METHODS:

Research was approved by the hospital Ethical Committee and all patients signed an informed written consent document .This observational & descriptive study was carried out in the Department of Obstetrics and Gynecology at Saidu Teaching Hospital, Swat, from 1st March 2015 to 29th Feb 2016. Total 313 pregnant women were included in the study, who had Gestational Diabetes or Established Diabetes.Pregnant patients having contracted pelvis, placenta previa, breech presentation, pre-eclampcia and eclampcia, were excluded from the study, as these are the independent indicators for cesarean section. Information was collected on proforma by verbal interviews. Detail history was taken regarding maternal age in years, gestational age in weeks and progression about the present pregnancy. Per abdominal examination was done for fundal height, lie and presenting part of the fetus, auscultation of fetal heart sounds and per vaginal examination were performed for dilatation of cervical os, effacement of cervix, station of the presenting part and whether the membranes were intact or not. These patients were followed till the end of labour and their mode of delivery i-e; normal vaginal delivery, instrumental delivery or cesarean section was recorded. Maternal HbA1c level was done at the time of delivery and was categorized as Mild (< 6.5), Moderate (6.5-9) and severe (>9). Maternal HbA1c was measured in hospital laboratory. Frequency of different grades of HbA1c levels and frequency of modes of delivery were the research variables. The numerical variables of mean HbA1c, maternal age in years and gestational age in weeks were analyzed by mean ± SD (range). Categorical variables like; grades of severity of HbA1c levels and frequency of modes of delivery were analyzed by frequency (number) and relative frequency (percentages). SPSS 20 (SPSS Inc. Chicago, Illnios, USA) was used to analyze the data.

RESULTS:

The total number of patients was 313. All the study population who were included in the study, were studied and followed till delivery

and no patient was lost to follow-up. Mean age was 27.85 ± 6.37 (43 – 15), (95% CI 28.39 – 27.30). The mean age of gestational amenorrhea, at which most of the patients presented was 38.31 ± 3.02, ranging from 41 to 29, (95%CI 38.57 – 38.5). The mean glycosylated Hemoglobin (HbA1c) was 6.9 ± 1.69 (95% CI 6.17 – 5.88).

The graphical presentation of frequency of HbA1c level of the patients are shown in (Fig. 01). Frequency of mode of delivery is shown in Fig. 02. The predominant mode of delivery in patients with any level of HbA1c levels was normal vaginal delivery, Table 01.

Figure 01: Frequency of HbA1c Level

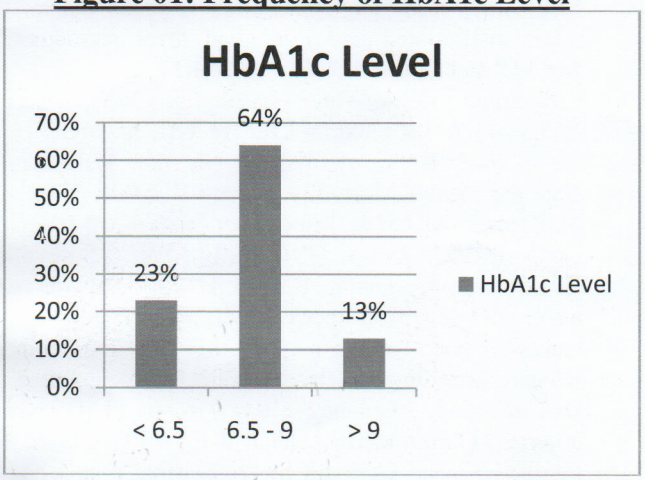


Figure 02: Frequency of Mode of Delivery

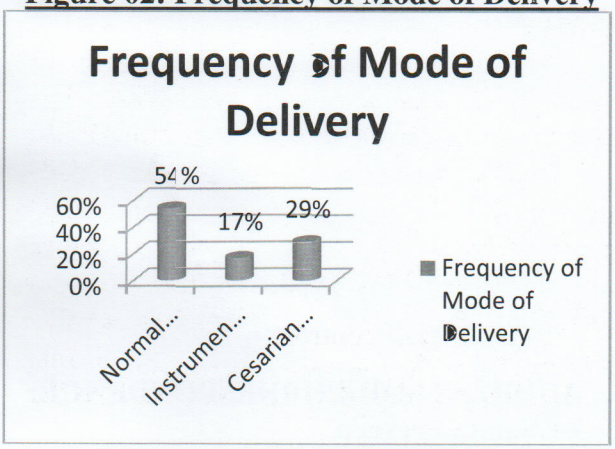


Table 01: Effect of HbA1c levels on mode of delivery

HbA1c Level	Mode of Delivery % (n)			Total % (n)
	Normal Vaginal Delivery	Instrumental Delivery	Cesarean Section	
< 6.5	16.5 (52)	1.8 (10)	05 (11)	23.3 (73)
6.5 – 9	30.7 (99)	13.5 (48)	19 (51)	63.2 (198)
>9	6.8 (24)	1.7 (4)	5 (14)	13.5 (42)
Total	54 (175)	17 (62)	29 (76)	100 (313)

DISCUSSION:

In my study majority of the patients has poorly controlled diabetes and rate of cesarean section was higher than general population. In instrumental delivery rate was also higher but it was not significantly high. The patient with well controlled diabetes has cesarean section rate almost comparable to that of general population. The patients with high HbA1c levels has lower rate of cesarean section.

The patients with very high HbA1c levels were 13.5% (n-42), and the study conducted by Kampan N[4] which showed a higher trend of cesarean section with rising HbA1c levels, in my study the patients with very high HbA1c levels has lower rate of cesarean section.My patients with higher HbA1c were mostly not priorly diagnosed or either with no ante-natal checkups and with poor compliance, they present at the time of delivery with complications, like; intra uterine fetal deaths, or congenitally anomalous baby, so cesarean section were avoided in such patients.

The patients with poorly diagnosed diabetes, i-e; 6.5-9% were 63% (n-198) of my study population, half of these patients delivered through cesarean section or via instrumental delivery. Coonrad DV[12] in her study also reported that the patients with higher HbA1c levels has significant increase risk of cesarean section and neonatal ICU admissions with

higher incidence of macrosomia and repiratory distress syndrome. In her study she found cesarean section rate 10 times higher than the healthy women.

Patients with well controlled diabetes, i-e <6.5%, were 23.3% (n-72) in my study, these patients have normal vaginal delivery rate of 16.5% (n-52)and operative delivery is 6.8% (n-21). There is increasing trend towards operative delivery. The study conducted by Gupta SR[2], showed same results , in which the rate of cesarean was higher in patients with well controlled diabetes, it may be because the therapeutic goal of normoglycemia may not be easily attained in clinical practice. And is therefore difficult to prevent all adverse fetal outcomes.

CONCLUSION:

In patients with uncontrolled diabetes the rate of complications increased and so does the rate of macrosomia and fetal distress, leading to higher rate of cesarean section and instrumental delivery, so by strict control of the blood sugar levels in a diabetic patient one can reduce the risk of operative deliveries and complications.

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