Retrospective Review of Maternal and Fetal Outcomes of Indigent Gestational Diabetes Patients Treated with Diet Monotherapy or Diet and Insulin

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BACKGROUND

History of Gestational Diabetes Clinic

• Clinic within the Hall County Health Department Prenatal Clinic which provides access to comprehensive, high quality, affordable prenatal care for low-income-uninsured women
• Clinic began in the 1970s in response to increasing number of women without prenatal care who presented to local hospital for delivery.
• Initially, local physicians donated their time to the clinic to work with health department nursing staff to provide obstetric care.
• In the late 1980s, midwifery program was added to the clinic.
• In the mid 1990s, the gestational diabetes clinic was created within the prenatal clinic. Patients who have either gestational or pregestational diabetes receive care in this clinic.
• Clinic currently functions as a collaboration of the Northeast Georgia Health System, The Longstreet Clinic and The Hall County Health Department.
• The percentage of Latinos in this clinic has grown from 20% in the early 1990s to over 90% currently.

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Hall County

• Located in Northeast Georgia, 50 miles northeast of Atlanta.
• Population is approximately 187,700.
• In 2007, average household income was $56,358.
• Industry: 24% service, 22.6% manufacturing, 14.2% government, 11.8% health care.
• Large Latino immigrant population due to strong manufacturing industry within the community.

OBJECTIVE

The objective of this review was to determine if there were statistically significant differences in maternal and fetal outcomes between diet only and diet + insulin groups .

METHODS

The retrospective chart review was completed on 160 gestational and pregestational Latino patients receiving care between March 2012 and March 2014.   Data was collected from both paper charts and electronic medical records August 2014– May 2015.

The baseline characteristics and maternal and fetal outcomes measured are provided below.

	Specific Characteristics or Outcomes
Baseline Characteristics	Patient age; ethnicity; BMI at initial visit; A1c at initial visit; gestational age (in weeks) at diagnosis
Maternal Outcomes	Rate of caesarean delivery; maternal weight gain; hypertension; pre-eclampsia; maternal glycemic control; maternal A1c (at end of pregnancy)
Fetal Outcomes	Large for gestational age (birthweight > 2 standard deviations (SD); macrosomia; birth weight; Apgar score at 5 minutes; hypoglycemia; premature birth; neonatal jaundice; dystocia

RESULTS

Baseline Characteristics	Group 1 (Diet Only) (85)	Group 2 (Diet + Insulin) (75)	P - value
Patients (%)	85 (53%)	75 (47%)	-
Patient age (years of age)	33.04 +/- 5.56	34.49 +/- 5.05	0.086
BMI at initial visit	31.57 +/- 5.00	34.13 +/- 5.59	0.003*
A1c at initial visit (%)	5.69 +/- 0.66	6.658 +/- 1.38	<0.001*
Gestational age (in weeks) at diagnosis	20.36 +/- 9.14	20.89 +/- 9.33	0.718

Maternal Outcomes	Group 1 (Diet Only) (85)	Group 2 (Diet + Insulin) (75)	P - value
Caesarean delivery (%)	28 (32.94%)	38 (50.67%)	0.089
Maternal weight gain (lbs) (SD)	14.58 (11.46)	16.14 (10.85)	0.385
Hypertension (%)	3 (3.53%)	7 (9.33%)	0.297
Pre-eclampsia (%)	6 (7.06%)	6 (8.00%)	0.874
Maternal glycemic values fasting (mg/dL) (SD)	90.67 (12.19(	99.17 (10.97)	<0.001*
Maternal glycemic values 2 hr PP breakfast (mg/dL) (SD)	108.78 (13.63)	116.11 (13.47)	0.001*
Maternal glycemic values 2 hr PP dinner (mg/dL) (SD)	117.07 (14.33)	112.95 (16.65)	0.02
A1c at end (%) (SD)	5.55 (0.46)	6.47 (1.79)	<0.001*

Fetal Outcomes	Group 1 (Diet Only) (85)	Group 2 (Diet + Insulin) (75)	P - value
Large for Gestational Age (%)	1 (1.18%)	5 (6.67%)	0.07
Macrosomia (%)	1 (1.18%)	5 (6.67%)	0.07
Birth weight (gm) (SD)	3346 (541)	3487 (716)	0.18
Apgar score at 5 minutes (SD)	8.94 (0.29)	8.70 (0.92)	0.41
Hypoglycemia (%)	0 (0%)	0 (0%)	-
Premature birth (%)	7 (8.24%)	11 (14.67%)	0.25
Neonatal jaundice (%)	0 (0%)	0 (0%)	-
Dystocia (%)	2 (2.35%)	3 (4.00%)	0.30

CONCLUSIONS

• Baseline characteristics
  • Patient age and gestational age at diagnosis were similar in patients in both groups.
  • A1c and BMI at initial visit was statistically significant between two groups.
     • Diet + insulin group had a significantly higher A1c and BMI at initial visit as compared to diet only.
     • Patients with higher A1c values and BMI will require insulin as compared to those with lower A1c and BMI initially.

• Maternal Outcomes
  • Rates of caesarean delivery, maternal weight gain, hypertension, pre-eclampsia were similar for both groups.
  • As with the initial A1c, statistical significance was found in A1c at end of pregnancy with significantly higher A1c in diet + insulin group.
  • Maternal glycemic control
     • Fasting, and 2 hr breakfast glycemic values were statistically significant between the two treatment groups.
     • Significantly higher values in the diet + insulin group.
     • 2 hour post prandial dinner glycemic control did not quite achieve statistical difference.

• Fetal Outcomes
  • Neonatal hypoglycemia and jaundice did not occur in either group.
  • Large for gestational age, macrosomia, Apgar score at 5 minutes, birth weight and premature birth were similar in both groups.
     • Apgar score at 5 minutes trended lower in diet + insulin

• Overall
  • Maternal outcomes that had significant differences in this smaller sample size were
     • A1c and BMI at initial visit
     • A1c at end of pregnancy
     • Maternal fasting, and 2 hr PP breakfast glycemic values
  • Fetal outcome s were similar whether treated with diet alone or diet + insulin.

DISCLOSURES