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TO DETERMINE FETAL MACROSOMIA FREQUENCY AMONG PREGNANT OBESE FEMALES

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Abstract:

Aim: *To govern the incidence of fetal macrosomia in obese women.*

Study design: *Descriptive case series.*

Place and Duration: *In the Obstetrics and Gynecology Department Unit II of Services Hospital Lahore for one-year duration from March 2018 to March 2019.*

Materials and methods: *One hundred and seventy-four women with a single pregnancy with a BMI more than 30 kg/m2 were selected at gestational amenorrhea age of 32 weeks or more. Fetal development in these obese women was monitored by ultrasound twice a week (estimated fetal weight and abdominal circumference). This was done by a radiologist consultant with a master's degree for at least five years and we observed whether these patients developed fetal macrosomia. Macrosomia has been marked as positive according to the criteria defined in the operational definition. The final result was measured after birth and recorded in the form.*

Results: *In our study, 23 women (42.6%) gave birth to macrosomic infants with a history of macrosomia in a previous pregnancy.*

Conclusion: *High BMI upsurges the risk of fetal macrosomia and there is a relationship between maternal obesity and fetal macrosomia.*

Keywords: *Obesity, body mass index, macrosomia.*

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INTRODUCTION:

Obesity is a public and distinct health problem worldwide because it contributes to the growth of many chronic illnesses. The percentage of obesity in the over-all population increases dramatically to 40% of overweight women in the UK. In the United States, the incidence of overweight in women between 20 and 29 years old is 12% in 1974–1974, from 1988 to 1988–1991. A three-fold increase in triglyceride levels, a 50% increase in low density lipoprotein (LDL) and high-density lipoprotein (HDL) are observed during pregnancy. The concentration of leptin determined by the level of fat increases threefold during pregnancy and correlates with the mother's body mass index. Increased maternal BMI is associated with adverse maternal effects such as hypertension, diabetes, thromboembolism and infection, while fetal complications associated with maternal obesity include neural tube defects, premature death, intrauterine death, and macrosomia. Fetal macrosomia is one of the most important and most difficult obstetric problems defined as gestational age greater than 4000 g or greater than 90 percent of birth weight. Prolonged delivery, instrumental delivery, shoulder deformity, increased cesarean delivery rate and postpartum hemorrhage hinder approximately 10% of all pregnancies.

Birth weight is influenced by various maternal, fetal, metabolic and genetic factors. The most sensitive factors for fetal macrosomia include gestational age, maternal diabetes, maternal obesity, multiplicity, previous macrosomic lactation, maternal age, ethnicity and race. Maternal obesity is associated with three or four times the likelihood of fetal macrosomia. In fact, maternal constitutional factors, such as obesity (BMI ≥30 kg / m2), have a higher predictive value for fetal macrosomia than maternal diabetes.

There is a relationship between maternal dose and obesity and fetal weight. In the meta-analysis, the incidence of fetal macrosomia in obese pregnant women was 13.3% (8.3%) compared to non-obese women. It is expected that obese women will have older children, and the increased weight of mothers is associated with a greater fat component in children. In pregnancy at risk of fetal macrosomia, subsequent ultrasound (every 3 to 4 weeks) for EFW (estimated fetal weight) and AC (abdominal circumference) can help after 32 weeks of pregnancy. It was emphasized that obesity is a serious public health problem. There is a strong relationship between maternal BMI, including fetal macrosomia, and a number of pregnancy-threatening complications. Therefore, pregnancies between overweight and obese women should be classified as high risk pregnancies and adequate prenatal care should be provided.

METHODOLOGY:

This descriptive case series was held in the Obstetrics and Gynecology Department Unit II of Services Hospital Lahore for one-year duration from March 2018 to March 2019. A form has been developed to record the results of this study (Annex I). Patients who met the inclusion criteria were selected. Appropriate approval was obtained from the corporate ethics committee for the audit. Informed consent was obtained from each patient, describing the examination procedures, explaining confidentiality and the fact that participation in the study did not pose a risk for them.

Obstetric and detailed clinical history were collected. Gestational age was calculated on the basis of an early obstetric examination. Fetal development in these obese women was monitored by ultrasound twice a week (estimated fetal weight and abdominal circumference). This was done by a radiologist consultant with a master's degree for at least five years and we observed whether these patients developed fetal macrosomia. Macrosomia has been marked as positive according to the criteria defined in the operational definition. The final result was measured at birth. Age, maternal parity, previous macrosomic history of breastfeeding and gestational age were confirmed using variable circulating layer tables.

All collected information was saved in a form specially designed and prepared for the test. Data were entered and analyzed using SPSS version 18 software, and descriptive statistics were used to calculate the mean and standard deviation of maternal age, parity and gestational age.

RESULTS:

The study was conducted in 174 obese women (BMI 30 kg / m2 in the first trimester of pregnancy) in a 32-week pregnancy in a single pregnancy. These women were then observed to see how many children had macrosomal infants (infant weight) 4000 g).

Obese women were between 30 and 39 years old, i.e. 91 (52.3%), then 77 (44.3%) patients of 20 to 29 years old. There were 6 women (3.4%) at the age of 40. The average presentation age was 30.02 ± 5.47 years in the 20-40 age range, as indicated in Table 1.

The average parity of women was 2.77 ± 1.66. (Table 2).

As shown in Table 3, there were 18 (10.35%) premature babies, 154 (88.5%) new born babies and 2 (1.15%) postpartum pregnancies. The mean gestational age was 36.86 ± 1.97 weeks.

A history of macrosomia was observed in 50 (28.7%) patients (Table 4).

In our study, the incidence of macrosomia was (54) 31.0%. (Table 5).

In this study, 18 (33.3%) patients with macrosomic children were between 20 and 30 years old, and 34 (63.0%) patients with macrosomia were between 30 and 39 years old. As indicated in Table 6, only 2 cases (3.7%) in this study were 40 years old with macrosomic infants.

Seven nulliparae (13%) delivered macrosomic babies, 29(53.7%) para 1–3 delivered macrosomic babies and 18(33.3%) para ≥ 4 delivered babies with macrosomia in current pregnancy (Table 7).

There were no women with macrosomic premature babies, 52 (96.3%) had thermo-macrosomic children, and 2 (3.7%) had no macrosomic children, as shown in Table 8.

In this study, 23 women (42.6%) gave birth to macrosomic infants with a history of macrosomia in a previous pregnancy (Table 9).

Table 1: Age distribution of obese patients (n=174)

Age (in years)	**=n**	**%age**
20 — 29	77	44.3
30 — 39	91	52.3
≥ 40	6	3.4
Total	174	100

Mean age ± S.D. = 30.02±5.47 years.
Age range = 20 – 40 years.

Table 2: Parity distribution of obese patients (n=174)

Parity	**=n**	**%age**
Nullipara	19	10.9
Para 1 – 3	98	56.3
Para ≥ 4	57	32.8
Total	174	100

Mean parity ± S.D. = 2.77±1.66.

Table 3: Gestational age distribution at delivery of obese patients (n=174)

Gestational age (in week)	**=n**	**%age**
34 — 36 (Preterm)	18	10.35
37 — 42 (Term)	154	88.5
> 42 (Post term)	2	1.15
Total	174	100

Mean gestational age ± S.D. = 36.86±1.97 weeks

Table 4: Previous history of macrosomia in obese patients (n=174)

Macrosomia	**=n**	**%age**
No	124	73.3
Yes	50	28.7
Total	54	100

Table 5: Frequency of Macrosomia in obese women in present pregnancy (n=174)

Macrosomia	**=n**	**%age**
No	120	69
Yes	54	31
Total	174	100

Table 6: Age distribution of obese patients in relation to outcome (n=174)

Age (in years)	**No. of women with Macrosomic babies in present study**	**%age**
20 — 29	18	33.3
30 — 39	34	63
≥ 40	2	3.7
Total	54	100

Table 7: Parity distribution of obese patients in relation to outcome (n=54

Parity	**No. of women with Macrosomic babies in present study**	**%age**
Nullipara	7	13
Para 1– 3	29	53.7
Para ≥ 4	18	33.3
Total	54	100

Table 8: Gestational age distribution of obese patients in relation to outcome (n=54)

Gestational Age (in week)	**No. of women with Macrosomic babies in present study**	**%age**
34 — 36 (Preterm)	0	0
37 — 42 (Term)	52	96.3
> 42 (Post term)	2	3.7
Total	54	100

Table 9: Previous History of Macrosomia in Relation to Outcome (n=54)

Macrosomia in previous pregnancy	**No. of women with Macrosomic babies in present study**	**%age**
No	31	57.4
Yes	23	42.6
Total	54	100

DISCUSSION:

Obesity is a global health problem that has become more common. In many industrialized countries, one in five women who book prenatal care is obese. The World Health Organization believes that obesity is a common problem for women who are more men than men. That is why most pregnant women have a high body mass index (BMI). Obesity is a chronic condition that predisposes patients to many serious health disorders and premature deaths. Pregnancy in obese women is characterized by maternal complications (gestational diabetes, hypertension disorders) and fetus (macrosomia, neural tube disorders, fetal deaths), because obesity during pregnancy is considered a high-risk condition). Because of these complications, caesarean section is more common in obese women than in slim women. The birth weight of a child is influenced by the variable behavior and characteristics of the mother before pregnancy. The incidence of macrosomic newborns has been increasing for decades in many parts of the world. There is a lot of evidence that fetal macrosomia is associated with an increased

risk of complications in both mother and newborn baby. A macrosomic fetus is a common clinical challenge in existing obstetricians. There is evidence that the macrosomia is also associated with future health threats. Diabetes, previous macrosomic births, subsequent dates (> 42 weeks of pregnancy), obesity (BMI> 30 before pregnancy), children, gestational diabetes and smoking are independent risk factors for fetal macrosomia. This study was conducted to determine the incidence of fetal macrosomia in obese women. In our study, the incidence of macrosomia in obese people was 31.0%, perhaps due to a lack of prenatal care and education. The age presented was higher in the age group of 30 to 39 years, i.e. 91 (52.3%) patients. The average birth age was 30.02 ± 5.47 years, and the average parity was 2.77 ± 1.66 years. The average gestational age of our patients was 36.86 ± 1.97 weeks. Usha Kiran et al obesity has been shown to be a risk factor for diabetes-independent macrosomia (OR 2.1, CI 1.6-2.6). Owens et al. In macrosomia studies, BMI was found in 15.5%, 21.4% and 27.8% of normal overweight and obese mothers (p <0.01). Hincz et al. In the study group (obesity) it was found that macrosomia is much higher than in the control group (20.19% and 5.69%, p <0.001). They concluded that maternal obesity is an important perinatal risk factor and neonatal macrosomia is one of the most common complications. In a study in Saudi Arabia, El-Gilana and Hammad found that obese women have an increased risk of macrosomia in their newborns (relative risk = 6.8 [95% CI 1.5-30.7]). The incidence of macrosomia in obese people was 4.4%. The average age of obese patients was 30.7 ± 6.4 years. Zonana-Nacach et al. A study by Obese showed that women are at risk of neonatal macrosomy (OR 6.6 95% CI 1.8-23). In one study, Michlin et al. The incidence of macrosomia in obese women was 16.8%. Jared M et al. Macrosomia was found to be 2.1 (CI: 1.9; 2.3) (≥ 4000 g) in women with BMI ≥ 30.0. They concluded that obesity during pregnancy is associated with an increased risk of fetal macrosomia.

Other employees have also found a link between obesity and the risk of fetal macrosomia. Pregnancy should be closely monitored and obese women should be carefully planned. Weight loss should be considered before conception. Our study is a small hospital and does not provide a full scenario for women at risk of obesity and macrosomia in our region. Therefore, further research may be considered.

CONCLUSION:

An increase in BMI increases the risk of fetal macrosomia and other complications. In our study, the incidence of macrosomia in obese women (31%) is a problem. Pregnant obesity should be considered a high risk because of its association with negative obstetric results. If possible, it is necessary to encourage obese women to lose weight before becoming pregnant without changing their lifestyle. Macrosomia in a previous pregnancy increased the risk of macrosomia in this study (42.6%).

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