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MATERNAL AND FETAL OUTCOME IN OBESE LABORING WOMEN

1. **ANJUM REHMAN**
2. **SAHER FATIMA**
3. **ZEESHAN AHMED**

1. ***Head of Department Gynae & Obs,***
   Shaheed Mohtarma Benazir Bhutto Medical College Lyari, Karachi
2. ***Assistant Professor,***
   Gynae & Obs,
   Shaheed Mohtarma Benazir Bhutto Medical College Lyari, Karachi
3. ***Medical Student***
   Shaheed Mohtarma Benazir Bhutto Medical College Lyari, Karachi

For further correspondence:
DR. SAHER FATIMA
email:
dr_saher_fatima@hotmail.com
Cell #:0336-2169486

ABSTRACT:

Objective: The purpose of this study was to assess maternal and fetal outcome in obese laboring women.
Design & Duration: A descriptive case series study from June 5, 2011 to June 5, 2012.
Setting: Gynaecology and Obstetrics Department, Shaheed Mohtarma Benazir Bhutto Medical College, Lyari General Hospital, Karachi.
Patients: A total of 200 obese pregnant women were observed in labor and maternal and fetal complications were observed.
Methodology: We selected 200 obese women who presented to us in labor during study duration and data was collected regarding maternal and fetal complications during labor, delivery and in early postpartum period, till patient is discharged from the hospital.
Results: Out of total 200 women, 80 were primigravida while 120 were multigravida. The mean age was 25.5±5 years. Postdates pregnancy was observed in 20%, while postterm pregnancy in 10% pregnancies. Induction of labor was required in 32% pregnancies. Caesarean delivery was required in 44% pregnancies while instrumental deliveries in 10.5% pregnancies. Complications encountered were Postpartum hemorrhage in 30% cases, Postpartum infections including uterine, wound and urinary tract infections in 7%, 9.5% and 15% cases respectively. Shoulder dystocia in 5% cases. Third degree perineal tear in 6.5% cases. Regarding fetal complications stillbirth was seen in 10.5% cases and early neonatal death in 8.3% cases. 37.4% of babies required neonatal intensive care unit admission. 20.5% of all babies were found to be macrosomic (weight >4kg).
Conclusion: This study proves that maternal obesity is associated with adverse maternal and fetal outcome in pregnancy including prolonged pregnancy, failed induction of labor, operative deliveries, shoulder dystocia, perineal tears, postpartum hemorrhage and postpartum infections. The babies of these women have high perinatal mortality rate and increased need for neonatal intensive care unit admission.

Key words: Body mass index, obesity, perinatal mortality, macrosomia and cesarean section.

INTRODUCTION:

Obesity is associated with several serious and life threatening problems. [1,2] Maternal pregravid obesity is a significant risk factor for adverse outcomes during pregnancy.[3] The increasing prevalence of obesity worldwide has prompted the WHO to designate obesity as one of the most important global health threats. A generally accepted definition of obesityis body mass index (BMI) greater than 30kg/m^2. [4,5]
The prevalence of obesity in pregnancy in the United States and other developed countries approximates one third of the pregnant females. [6,7] While in Pakistan, the incidence of obesity in females of reproductive age group ranges from 13.5% to 40%.[8]Maternal obesity is associated with a number of maternal and fetal complications.

Confidential enquiry into maternal and child health (2003-5), reported that maternal deaths incidence in obese women was 27%.[9,10]

Obese women during pregnancy have a higher risk of developing gestational diabetes as compare to their normal weight controls (17% versus 1-3%). Hypertensive disorders are more common in obese women. They have 14-25% incidence of pre-eclampsia.[11]Other problems including increased incidence of thromboembolic events (odd ratio of 5.3), respiratory disorders (like asthma and sleep apnea), infections(urinary tract, wound and uterine infection) and metabolic syndrome are also observed. [12]

Obesity is also related to adverse outcome in labor including increased incidence of labor induction, prolonged pregnancy, failure of labor to progress and cesarean delivery.[11] Obese women have higher rates of postpartum hemorrhage and prolonged hospital stay.[13] Increased risk of failure to initiate lactation due to lactate dysfunction. [14]

Obesity affect fetal outcome leading to increased incidence of congenital anomalies, perinatal mortality and antepartum stillbirth, preterm birth, macrosomia, birth trauma and childhood obesity in their babies.[14]

The purpose of this study is to review the frequent maternal and fetal complications in obese women in our setup so that the obese pregnant women should be counseled accordingly.

PATIENTS AND METHODS:

This is an descriptive case series study carried out at Department of Gynaecology and Obstetrics, Lyari General Hospital Karachi from June 8,2011 to June 8, 2012 on 200 obese pregnant women (BMI >30Kg/m2) of reproductive age group(15-45 years), who presented to us at full term in labor. Women with certain co-morbidities diagnosed before this pregnancy including diabetes mellitus, hypertension and cardiac disease, previous 2 or more cesarean sections and grand multigravidas were excluded from the study.

The obese pregnant women were observed from the time she presented to us in labor room till she was discharged from the hospital. A Proforma was made and all relevant details with respect to labor and maternal or fetal complications were entered and data compiled. Statistical software SPSS version 11 was used for statistical data analysis.

RESULTS:

During the study period 200 obese pregnant women were studied at time of their presentation at labor room. The age of the patients was between 17-40 years and the mean age was 25.51±5.0 SD. 40% of patients were primigravida and 60% were multigravida. The gestational age of patients at time of presentation in labor ranges from 37-43 weeks. Out of these 200 patients, 70% presents at term(gestational age 37-40 weeks), 20% present at postdates (40-42 weeks), and 10% presents at postterm (>42 weeks).

Regarding the onset of labor 32% need labor induction, while spontaneous labor occurs in 68% patients. Out of these 64 patients in which labor was induced, failed induction occurred in 27 patients (42.18% of patients who were induced) and they were finally delivered by c/s. in remaining 37 patients who were induced 29 patients were delivered by spontaneous vaginal delivery, 6 by ventose vaginal delivery and 2 by forcep vaginal delivery.

It was observed that out of 20 (10%) pregnancies, which reached to postterm, 16 women have a need for induction of labor that is 80% of postterm pregnancies, whereas in postdates pregnancies and in term pregnancies it was just 47.5% and 20.7% respectively.

Regarding mode of delivery 45.5% of women were delivered by spontaneous vaginal delivery, 44% by cesarean delivery and 10.5% by instrumental vaginal delivery. Out of the 88 women who delivered by c/s, emergency c/s were done in 65 women while elective c/s were done in 23 women. Out of the 21 patients who were delivered by instrumental vaginal delivery,ventose vaginal delivery was done in 13 patients, while forceps vaginal delivery in 8 patients.

Intrapartum complication including shoulder dystocia wasencountered in 10(5%) deliveries, while third degree perineal tear was encountered in 13 (6.5%) and fourth degree tear was seen in none. Primary postpartum hemorrhage was encountered in 60(30%), while postpartum infections occur in 63 women. Out of the 63 women whoencountered postpartum infections, urinary tract, uterine and wound infections occurs in 30,14 and 19 women respectively.

In our study, there were 21(10.5%) stillbirths. Out of 179 live

TABLE
BABIES OUTCOME
n= 200

TOTAL BIRTHS (n=200)			
	Alive at time of birth	Stillbirth	Total
	179	21	200
OUTCOME OF ALIVE BORN BABIES (n=9l) (n=179)			
	Yes	No	Total
Need NICU admission	67 (37.43%)	*112 (62.57%)*	*179*
Early neonatal deaths in NICU admitted babies	15 (22.3%)	52 (77.7%)	*67*

Total number of babies survived after excluding early neonatal deaths =164

births NICU admission was required in 67 babies (37.43%). Out of these NICU admissions early neonatal death was seen in 15 babies (22.3% of NICU admitted babies). So early neonatal death actually occur in 8.3% of total live born babies. (Table # I)
Macrosomia that is birth weight of babies greater than 4 kg was seen in 41babies. Shoulder dystocia was encountered in 17 out of 41macrosomic babies (i.e.41.46% of macrosomic babies).
Percentage of shoulder dysfucia in babies with weight <4kg was 2.5% (i.e. 4 in 159 of<4kg weight babies). Out of these 41macrosomic babies, need forNICU admission was seen in 33 babies (80.48% of macrosomic babies), while in those babies with birth weight <4kg, NICU admission was required in 21.38 % (i.e. 34 of 159babies with birth weight <4kg). (Table#1)
Congenital abnormalities were observed in 5 babies in whom 3 were found to have neural tube defects and 2 have cleft lip. None of them were found to be fatal.

DISCUSSION:

Obesity has become a worldwide epidemic. Its incidence among adults has doubled and among adolescents has tripled. [15] Many studies have shown that obese pregnant women exhibit a variety of obstetrical risks for both mother and fetus.[16,17] However, there is limited substantiated knowledge to what extent these risks impacts the overall outcome of these pregnancies. In our study of 200 obese pregnant women, age of patients ranges from 23 (17 -40) years with a mean age of 25.5±5.0SD, which is almost the same as quoted by other investigators. [18, 19]
Studies have indicated a high prevalence of obesity in multiparous as compare to nulliparous women. The reason behind this is retention of weight gained during each pregnancy. In our study out of 200 patients, 40% were found to be primigravidas, while 60% were multigravidas. Similarly Getahun D el aI, showed an increased prevalence of prepregnancy obesity in the 2nd pregnancy (14.9%).[20] Also Sebire NJ et al, indicated prevalence of obesity 66.5% in multiparous and 33.5% in primiparous women.[19]
Prolonged pregnancies that are post term and postdate pregnancies are associated with multiple adverse maternal and neonatal outcomes. In our study 70% of obese women were delivered between 37-40, 20% between 40-42 and 10% at >42 weeks gestation. Stotland NE etal quoted delivery rate of 47.4% in between 37-39 weeks, 47.2% in 40-41 weeks and 5.4% at >42 weeks.[21]Denison FC et aI, quoted 6.8% of postterm deliveries.[22]
The need for inducing labor increases with rising BMI, due to prolong gestation (post term pregnancies) and other obesity related complication like gestational diabetes and pregnancy-induced hypertension. In our study 32% of women need labor induction. Similarly, Bhattacharya S et al, Stepan H et al andArrowsmith S etal quoted incidence of 42.8%,26.7% and 34.4% for obese women and 49% and 35.3% for morbidly obesewomen respectively.[22,23,24,25]
We noticed higher induction rate in postterm pregnancies (i.e. out of 20postterm pregnancies,16 women need labor induction (i.e.80% of post term pregnancies), whereas in postdates and term pregnancies incidence was just 47.5% and 20.7% respectively.)
Studies indicate that c/s rate for obese women was over 20% compare to nearer 10% for normal weight women.[19]Obesity in these women lead to an increased risk of cesarean delivery. In our study c/s rate was 44% with rate of emergency c/s 32.5% and elective c/s 11.5%. Bhattacharya S et al and Getahun D et al, quoted rate of emergency c/s 26.3% and 35.3% elective c/s 4.7% .and6.1 % in obese women and 42.7% (EILSCS 10.2% and EmLSCS32.5%)in morbidly obese women respectively.[20,22]
Obesity also increased the rate of instrumental deliveries. We also noticed a higher delivery rate which was 10.5%, correlates with others where incidence was 13.6% and 9.08% respectively.[25,26,27]
Bhattacharya S et al, quoted higher incidence of need for instrumental deliveries in obese nulliparous women, which was 25.0% in obese and 24.2% in morbidly obese women.[22]
The incidence of postpartum hemorrhage (30%) was found to be higher both after vaginal delivery and c/s. Similarly Bhattacharya S etaI, quoted incidence of PPH 19.9% in obese women and 23.6% in morbidly obese women.[22]Also these women have higher incidence of perineal tear and uterine atony and difficulty was encountered in suturing these tears due to poor visualization due to increased pelvic fat in these women as a result they required more blood transfusion due to primary PPH.
Infectious morbidity is also observed to be higher in obese patients, especially in cases of c/s where the risk increases 2-3 times.[28]In our study uterine, wound and urinary tract infections were observed in 7%, 9.5% and 15% cases respectively. Myles TD et al found uterine, wound and urinary tract infections in 14.1 %,3.5% and 1.56% cases respectively.[28]Schneid-KN etaI, quoted wound infection in 5.4% obese women after C/S.[29]
Third degree tear occur in 6.5% cases in our study. Similarly, Kabiru W et al quoted 27.5-30.8% incidence of third and fourth degree tear. [17]
In our study macrosomia was observed in 20.5% subjects and these babies need more NICU admissions. Similarly other authors show incidence of 17.46% and 16.9% respectively.[19,20,30]
Bhattacharya S etaI, showed incidence of 13.7% in obese and 15.9% inmorbidly obese women.[22]
Another problem faced during delivery in these macrocosmic fetuses was shoulder dystocia. According to studies, frequency of shoulder dystocia increased >3-folds in patients with BMI e”40 kg/m^2.[28] In our study shoulder dystocia was encountered in 5% cases and it was also observed that shoulder dystocia was encountered in 17 out of 41 macrosomic babies (i.e. 41.46% of macrosomic babies). While percentage of shoulder dystocia in babies with weight <4kg was 2.5 % (i.e. 4 in 159 of <4kg weight babies).
Maternal obesity is associated with an increased risk for perinatal mortality due to obesity related gestational diabetes, hypertensive disorder, hyperlipidemia, hyperinsulinemia and apnea-hypoxia events. In our study 10.5% babies were delivered stillbirth. Similarly, Chu SY et al and Kristensen J reported that obese women had more than twice risk of stillbirth.[16, 31]
In our study NICUadmission was required in 67 babies (i.e.37.43% of liveborn babies). While out of these NICU admissions early neonatal death was seen in 15 babies (i.e.22.3% of NICU admitted babies). Sebire NJ etaI, also quoted increased NICU admission in these babies.[19]
Our study clearly showed that a high pre-pregnancy BMI is associated with adverse maternal and fetal outcome. As maternal obesity is a modifiable risk factor with many lifelong health effects,
proper weight prior to pregnancy and to closely monitor weight gain during and after pregnancy can control this obesity related health affect.

CONCLUSION:

Obesity is a growing problem in our country, and it has important impact on pregnancy complications. A positive trend towards weight control in our reproductive age women will bring a healthy change in maternal and neonatal outcome. Also burden of cost of obesity related complications on economy ofPakistan would be significantly reduced. Our findings reinforce the importance of educating women about appropriate weight gain before and during pregnancy and the clinical implications should have their BMI calculated in period when they are planning to conceive and all pregnantwomen should have their BMI calculated at booking as a part of the full risk assessment.

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