OBESITY RELATED MATERNAL COMPLICATIONS IN PREGNANT WOMEN

Wajeeha Syed1,2

ABSTRACT

OBJECTIVE: To determine the frequency of maternal complications in obese antenatal women.

METHODOLOGY: This descriptive cross sectional study was conducted in department of obstetrics and gynecology, Lady Reading Hospital, Peshawar-Pakistan, from April 2010 to March 2011. Total 250 consecutive antenatal patients with BMI >25kg/m2 (as per criteria for Asian population) were included in the study that fulfilled the inclusion criteria. Maternal complications associated with obesity like gestational diabetes, pregnancy induced hypertension (PIH), pre-eclampsia, cesarean section and reduced vaginal birth after cesarean section (VBAC) was determined. Data was analyzed by SPSS version 10.

RESULTS: Out of 250 obese antenatal women, 189 (75.6%) were multigravida and 61 (24.4%) were primigravida. In 212 (84.8%) cases, BMI ranged from 26-30 kg/m2 and in 38 (15.2%) cases it was 31-36kg/m2. Majority (n=166; 66.8%) were ranging in age from 21-30 years and 38 (15.2%) cases it was 26-30 kg/m2. Out of 250 obese antenatal women, 189 (75.6%) were multigravida and 61 (24.4%) were primigravida. In 212 (84.8%) cases, BMI ranged from 26-30 kg/m2 and in 38 (15.2%) cases it was 31-36kg/m2. Majority (n=166; 66.8%) were ranging in age from 21-30 years and 38 (15.2%) cases it was 26-30 kg/m2.

CONCLUSION: Obesity in pregnancy is associated with adverse maternal outcome like gestational diabetes, pregnancy induced hypertension, pre-eclampsia, increased, cesarean rate and reduced VBAC rates.

KEY WORDS: Body mass index (BMI), Pregnancy induced hypertension (PIH), Vaginal birth after cesarean section (VBAC)

INTRODUCTION

Obesity is a global problem and affecting more than half a billion adults worldwide. According to WHO estimates, about 205 million men and 297 million women over the age of 20 are obese.1 A recent study showed that 1 in 5 women booking for antenatal care in 2002-2004 were obese.2 Body mass index (BMI) greater than 30kg/m2 is a globally accepted definition for obesity while over weight is defined as BMI 25-29.9kg/m2. The cut off level of BMI for Asian is >23kg/m2 for overweight and >25kg/m2 for obese.3,4 In our country obesity stands out to be a major health hazard with an incidence as high as 13.5%.5 WHO reports a prevalence of 17.19 % in the developing world.6

In pregnancy BMI is calculated using pre pregnancy weight if this is unknown then the first weight measurement at prenatal care is used.7 Obesity is implicated as a risk factor for both maternal and fetal complication. Studies showed about 14-25% risk of gestational diabetes and preeclampsia in obese pregnant ladies.8,9 These women are at double risk of ending in cesarean section.10,11 Studies also showed increased risk of infectious morbidity, post-partum hemorrhage (PPH), delivery of large for date babies , still birth and intra-partum complications.12,13

There are a few local studies from Karachi on effects of obesity on outcome of pregnancy.14-16 However, there were no study from Khyber Pakhtunkhwa on the obesity related outcome of pregnancy. This study was planned to determine frequency of complication in relation to pregnancy and obesity in our set up, so as to emphasize the importance of optimum BMI preconceptionally in achieving good pregnancy outcome.

METHODOLOGY

This descriptive cross sectional observational study was conducted in department of obstetrics and Gynecology Lady Reading Hospital, Peshawar from 1st April 2010 till 31st March 2011. A total of 250 obese pregnant women were selected by convenience sampling with age range of 15 to 35 years and BMI >25kg/m2 having singleton pregnancy, primigravida or multigravida and of any gestational age were included. Multiple pregnancy, polyhydramnios, previous cesarean section with a recurrent cause were excluded. Weight was measured in kilogram by weighing machine with traditional clothing and height measured in meters with measuring tape without shoes and BMI calculated by kg/m2. Gestational age was calculated by date of last menstrual period or scan available. BP
was measured by mercury sphygmomanometer and 24 hours urinary collection was done to measure loss of protein in urine. Fasting and random (2 hours post prandial) blood sugar were used for detecting diabetes because these test could be conveniently done as the study included emergency patients. Progress of labour was monitored on partogram. Data was analyzed by SPSS version 10.

RESULTS

This study was performed on 250 antenatal patients with a BMI greater than 25 kg/m$^2$. Only 30 (12%) were booked in our unit. They were followed regularly in antenatal clinic as well as during labour and in postpartum period. Rest of 220 (88%) women were admitted in emergency. Most of the patients belonged to low or middle socioeconomic class. Out of 250 women, 189 (75.6%) were multigravida and 61 (24.4%) were primigravida. Majority of patients (n=160; 66.8 %) were ranging in age from 21-30 years. Out of 250 cases, 190 (76%) cases presented in 36-40 weeks of gestation (Table I). In 212 (84.8%) cases, BMI ranged from 26-30 kg/m$^2$ and in 38 (15.2%) cases it was 31-36kg/m$^2$.

Frequency of complications in obese antenatal women is given in Table II. Gestational diabetes mellitus (GDM) was diagnosed in 51 (20.4%) cases and Pre-eclampsia was observed in 12 (4.8%) patients. Out of 76 (30.4%) patients ending in cesarean section, 21 (8.4%) had failure to progress of labour in first stage, 9 (3.6%) had failure to progress in 2nd stage of labour as detected on partogram and 46 (18.4%) had cesarean section due to fetal distress.

DISCUSSION

The purpose of study was to test the hypothesis that obesity in pregnancy puts mother at risk of adverse outcome. According to recommendation by WHO regional office for Asia pacific regional published in February 2000 we took obesity at BMI > 25. Patients in our set up seldom report for pre-pregnancy check-up and most of them come at term on in labour. So we included all those patients who had BMI of > 25kg/m$^2$, irrespective of gestational age and were fit according to inclusion criteria. Pregnancy induced hypertension was observed in 17.2% cases and pre-eclampsia in 4.8% of cases in the study. PIH was observed in 10.1% of cases in study conducted by Jaleel R. Also as most of the patients came at term or in labour and as there was limited follow up we were not able to exactly separate PIH cases from chronic hypertension. We used large size cuff for BP measurement in obese women because false high BP level are obtained with normal size cuff. Finding of Sebire NJ at al show a lower trend in PIH but they concentrated mainly on pre eclampsia. GDM was found in 20.4% of one cases. We excluded those patients who were type II diabetic and concentrated only on gestational diabetes. Linne Y et al, Jaleel R et al, Callaway LK et al, Arendas K et al, Galtier F et al, and Abenhaim HA et al all found the same result during their study.

Obesity is also associated with increased rates of cesarean section both elective and emergency cesarean. We observed increase frequency of cesarean section which is consistent with other studies like Jaleel R and Sebire. Uterine contractility is suboptimal in obese women even after augmentation with syntocinon and increase fats in pelvis may also obstruct labour. The operating time and post operative hospital stay and infectious morbidity is increased in these patients. Failure to progress in first and second stage of labour was seen in 8.4% and 3.6% cases as compared to 6%

<table>
<thead>
<tr>
<th>TABLE I: AGE AND GESTATIONAL AGE OF OBESE ANTENATAL WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>AGE</td>
</tr>
<tr>
<td>15-20 YEARS</td>
</tr>
<tr>
<td>21-30 YEARS</td>
</tr>
<tr>
<td>31-35 YEARS</td>
</tr>
<tr>
<td>GESTATION</td>
</tr>
<tr>
<td>28–30 WEEKS</td>
</tr>
<tr>
<td>31–35 WEEKS</td>
</tr>
<tr>
<td>36–40 WEEKS</td>
</tr>
<tr>
<td>&gt;40 WEEKS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TABLE II: FREQUENCY OF COMPLICATIONS IN OBESE ANTENATAL WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complications</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Cesarean section</td>
</tr>
<tr>
<td>Gestational Diabetes</td>
</tr>
<tr>
<td>Pregnancy induced Hypertension</td>
</tr>
<tr>
<td>Vaginal birth after delivery</td>
</tr>
<tr>
<td>Preecclampsia</td>
</tr>
</tbody>
</table>
and 1.5% in a study by Sheiner E et al.11
VBAC was observed in 13.2% of cases. 
Chuhan et al12 observed that in women 
weighing more than 136 kg, VBAC was 
successful in only 13% cases which is 
lower than cited for general population 
at 60 to 80% cases. The increase rate of 
failed VBAC may be because monitoring 
of obese patients for scar tenderness 
and fetal heart rate is more difficult than 
in patients with normal BMI. Thus this 
simple observational study supplements 
the findings of other studies that obesity 
in pregnancy increases the maternal risk 
which persists even after confounding 
factors are taken into account.

CONCLUSION

Obesity in pregnancy is associated 
with adverse maternal outcome like 
gestational diabetes, pregnancy induced 
hypertension, pre-eclampsia, increased, 
cesarean rate and reduced VBAC rates. 
This study emphasize the importance of 
normal BMI prepregnancy and during 
pregnancy to avoid the complication and 
thus to decrease work load on health 
related staff.

REFERENCES

1. World Health Organization. Global Health 
Observatory (GHO). Obesity: Situation 
and trends. Cited on October 23, 2013]. 
Available from URL: http://www.who. 
int/gho/ncd/risk_factors/obesity_text/en/
2. Lingam KMG, Faroohi NG, Greer IA, 
Sattar N. Changes in booking body mass 
index over a decade: retrospective analysis 
from a Glasgow maternity hospital. Br J 
3. World Health Organization, Western 
Pacific Region. The International 
Association for the Study of Obesity and the 
International Obesity Task Force. The 
Asia–Pacific perspective: redefining obe-
sity and its treatment. Sydney, Australia: 
Health Communications Australia Pty 
Limited; 2000. [Cited on December 03, 
4. Choo V. WHO reassesses appropriate 
body- mass index for Asian populations. 
5. Nanan OJ. The obesity pandemic implica-
tions for Pakistan. J Pak Med Assoc 
6. Kanagalalingam MG, Forouhi NG, Greer IA, 
Sattar N. Changes in booking body mass 
index over a decade: retrospective analysis 
from a Glasgow Maternity Hospital. Br J 
7. Bilal N, Akbar N, Khan AB. Obesity is a 
gateway to complications. Ann Pak Inst 
8. Linne Y. Effects of obesity on women's 
reproduction and complications during 
9. Vyas S, Ghani L, Khazaezadeh N and 
Oteng - Ntim E. Pregnancy and obesity. In: 
Studd J, Tan SL, Chervenak FA (editors). 
Progress in obstetrics and gynecology. 
10. Vahratian A, Siega-Riz AM, Savitz OA, 
Zhang L. Maternal pre-pregnancy over-
weight and obesity and the risk of ceasarean 
delivery in nulliparous women. Ann 
11. Sheiner E, Levy A, Menes TS, Silverberg 
D, Katz M, Mazor M. Maternal obesity 
as an independent risk factor for ceasarean 
delivery. Paediatr Perinat Epidemiol 
2004;18:1-2096
12. Castro LC, Avina RL. Maternal obesity and 
pregnancy out comes. Curr Opin Obstet 
13. de Groot LC. High maternal body weight 
and pregnancy outcome. Nutr Rev 199:57: 
62-4.
14. Jaleel R. Impact of maternal obesity 
on pregnancy outcome. J Surg Pak 
2009;14:2-6.
15. Ali HS, Lakhani N. Effect of obesity and its 
outcome among pregnant women. Pak J 
16. Shabab U, Tahir S. Effect of obesity on 
cesarean Section rate. J Surg Pak (Internat) 
17. Sebire NJ, Jolly M, Harris JP, Joffe M, 
Regan L et al. Maternal obesity and pregnancy out come . Internat J Obesity 
2001;25:1175-82.
18. Callaway LK, Prins JB, Chang AM, McIntyre 
HD. The prevalence and impact of 
overweight and obesity in an Australian 
obstetric population. Med J Australia 
2006;184: 56-9.
19. Arends K, Qin Q, Gruslin A. Obesity in 
pregnancy: pre-conception to postpartum 
consequences. J Obstet Gynaecol 
20. Gartner F, Rainierd I, Renard E, Boulot 
P, Bringer J. Optimizing the outcome of 
pregnancy in obese women: from pre-
gestational to long term management. 
Diabetes Metab 2008;34:19-25.
21. Abenhaim HA, Kinch RA, Morin L, Benja-
min A, Usher R. Effect of pre pregnancy 
body mass index categories on obstetrical 
and neonatal outcomes. Arch Gynecol 
22. Chauhan SP, Magann DR, Carroll CS, Bar-
rilleaux PS, Scardo J A, Martin Jr JN. Mode 
of delivery for morbidly obese with prior 
cesarean delivery. Vaginal versus repeat 

AUTHOR’S CONTRIBUTION

The sole author (WS) has made substantial contributions to the manuscript in conception and design, acquisition of data, drafting the manuscript and final approval of the version to be published. Author agrees to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE

NIL