ORIGINAL ARTICLE

Maternal Outcome in Obese and Non-Obese Women

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ABSTRACT

Aim: To compare the maternal outcome in obese and non-obese women

Methods: A total of 60 cases (30 obese with BMI >30kg/m^2 and 30 non-obese with BMI <30Kg/m^2) with singleton pregnancy, gestational age ≥20 weeks between 20-35 years of age were included in the study from Department of Obstetrics & Gynaecology, Services Hospital, Lahore during Sept 2007 to March 2008 while patients with known medical disorders i.e., hypertension, diabetes mellitus, eating disorders and Urinary Tract Infection were excluded from the study. All patients were followed through regular antenatal visits till their delivery. On each antenatal visit their weight and B.P recorded. Blood sugar level and urine C/E done. Maternal outcome (hypertension, gestational diabetes and urinary tract infection) were noted.

Results: Mean age was found as 28.73±4.62 years in Obese and 27.73±4.69 years in non-obese group, mean value of body mass index was 33.90±1.90 and 24.57±2.47 in obese and non-obese respectively. In obese cases, 30% and 6.7% in non-obese group ha PIH, preeclampsia was recorded in 13.3% in obese cases while no case in non-obese, eclampsia was recorded as 6.7% and 3.3% respectively, GDM was found in 20% cases with obesity and 3.3% in non-obese group, UTI was recorded in 26.7% in obese and 6.7% in non-obese group while cesarean section was recorded in 66.7% in obese group an 86.7% in non-obese group.

Conclusion: We are of the view that obesity is an independent risk factor for adverse obstetric outcome and is significantly associated with an increased cesarean delivery rate.

Keywords: Obesity, pregnancy, gestational diabetes, hypertension, mortality.

INTRODUCTION

Obesity is an abnormal expansion of adipose organs and is a pathophysiological response to an imbalance between energy intake and energy expenditure. It is a result of large number of diverse factors involving heritable and environmental characteristics[1]. Obesity in pregnancy involves women who have obesity before they become pregnant and women who have become obese during pregnancy.

Obesity is a world-wide growing epidemic.[2] More than half of all women of child bearing age are overweight and have obesity, making this one of the most common health problems for pregnant women and responsible for significant morbidity and mortality[3,4].

In Pakistan, the prevalence of obesity in 28-44 years old in rural area is 14% and in urban area is 37% for women and its rate is increasing due to urbanization changing life style, high caloric diet and lack of exercise[5].

Obesity is associated with adverse health outcome and is responsible for major obstetrical complications. These women have greater risk of complications as compared to women of normal weight and have harmful effects on both mother and fetus[6,7]. Antepartum maternal complications associated with obesity are hypertensive disorders (PIH, pre-eclampsia, eclampsia) gestational diabetes and urinary tract infections[8]. Therefore, in this study we compared the maternal complications in obese and non-obese women, highlighting obesity as an independent risk factor for poor maternal outcome in pregnancy, need for women to undergo life study changes and control their weight during child bearing years so that its complications may be minimized.

MATERIAL & METHODS

A total of 60 cases (30 obese with BMI >30kg/m^2 and 30 non-obese with BMI <30Kg/m^2) with singleton pregnancy, gestational age ≥20 weeks between 20-35 years of age were included in the study from Department of Obstetrics & Gynaecology, Services Hospital, Lahore during Sept 2007 to March 2008 while patients with known medical disorders i.e., hypertension, diabetes mellitus, eating disorders and Urinary Tract Infection were excluded from the study.

An informed consent was taken for any investigation required for data in research. For each patient history was taken including demographic information (name, age, address, parity) present

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pregnancy (LMP, EDD, DOP and any other problem during pregnancy) and obstetrical history was asked. General physical examination (height, weight, pulse, B.P) and per abdominal examination was carried out. Confounding variable (maternal age, parity) was controlled through matching. Glucose challenge test was performed on all patients and when found deranged oral glucose tolerance test (OGTT) was done to confirm gestational diabetes. All patients were followed through regular antenatal visits till their delivery. On each antenatal visit their weight and B.P recorded. Blood sugar level and urine C/E done. Maternal outcome (hypertension, gestational diabetes and urinary tract infection) were noted. All that information was recorded though proforma.

The Data was analyzed with the help of SPSS version 12.0. The variables to be analyzed were included demographics and maternal outcome. Quantitative data including age, BMI were analyzed by using mean and standard deviation. Qualitative data including maternal outcome (hypertension, gestational diabetes, urinary tract infection and parity) were analyzed by calculating frequency and percentage. Chi square test was used as a test of significance. The two groups were compared for outcome variables (poor maternal outcome like pregnancy induced hypertension, pre-eclampsia, eclampsia, gestational diabetes and urinary tract infections). The comparison was made by using chi square test, as the variables were mainly qualitative in nature. P value of $\leq$0.05 was taken as significant.

RESULTS

Most of the women in both groups were between 31-35 year of age, mean age was calculated as 28.73±4.62 years in obese group and 27.73±4.69 years in non-obese group, mean body mass index was calculated as 33.90±1.90 in obese and 24.57±2.47 in non-obese group. Maternal outcome in both groups was compared and detailed as below:

Maternal outcome in both groups

Maternal outcome	Obese	Non-obese	P value
PIH	9(30%)	2(6.7%)	0.019
Pre-eclampsia	4(13.3%)	0	0.038
Eclampsia	6(6.7%)	1(3.3%)	0.55
GDM	6(20%)	1(3.3%)	0.04
UTI	8(26.7%)	2(6.7%)	0.03
C- section	10(33.3%)	4(13.3%)	0.06

DISCUSSION

Obesity is a global health problem that is increasing in prevalence. The world health organization characterizes obesity as a pandemic issue with a higher prevalence in females than males. Obesity during pregnancy is considered a high risk state because it is associated with complications. Obesity have implications for all aspects of maternal/fetal health and outcome during pregnancy with short and long term ramifications[9].

Obese women are at greater risk of adverse reproductive health outcomes as compared to women of normal weight status[7]. Obesity is a risk factor for developing gestational hypertension, gestational diabetes and an independent risk of factor for cesarean delivery[10].

Obesity in women of reproductive age is increasing. It was found in this study that most of women were between 31-35 years of age, mean BMI in obese group was 33.90±1.90 and 24.57±2.47 in non-obese group.

The obesity is one of the most important risk factor for development of gestational hypertension. It was found in a study that moderately obese women have increased risk of pregnancy induced hypertension[11]. In another study obesity was found to be significantly associated with gestational hypertension and pre-eclampsia[12].

PIH was the most common complication in present study and amounted for 30% cases in obese group where 6.7% cases in non-obese group. My results are comparable to study showing increase percentage of hypertension disorders of pregnancy 28.8% in obese women as compared to 2.9% in non-obese women[13].

Another study conducted in Australia has shown incidence 38% of PIH in obese cohort which is higher than current results[14].

In present study, 13.3% patients had pre-eclampsia while no patient had this complication in non-obese group. The results are comparable to study which shows almost similar risk of pre-eclampsia (13.5% vs 3.9%) in obese group.[15] These are also in agreement to other studies which shows pre-eclampsia and hypertension disorders as maternal complications associated with obesity in pregnancy and its incidence is increased increasing BMI[16]. The incidence of eclampsia that was shown from current study was not significant. It was seen that only 6.7% patients had eclampsia in obese while 3.3% had in non-obese group. Results of present study are consistent with a case control study of 66 women with eclampsia who were matched with 264 control subjects. There was a trend towards increased risk of eclampsia but statistically it was not significant[1].

In the present study, the percentage of gestational diabetes in mothers was 3.3% in non-obese group while it was almost six times, 20% in obese group. These results are similar to a study which showed risk of gestational diabetes (15.4% vs

1.8%) in comparison of obese with women of normal BMI[18].

Obesity during pregnancy is associated with higher risk of UTI, in this study it is found to be a common complication. In obese group it was found to be in 26.7% while it was only 6.7% in non-obese group. This is comparable to a study which concluded that women with high BMI(>30kg/m^2) compared to women with normal BMI carries significant risk for UTI[19]. According to the results of this study, 33.3% patients in obese group were delivered by cesarean section while 13.3% patients in non-obese group had cesarean section. This is comparable with study showed that the cesarean section rate was significantly elevated 25.1% in obese patients (BMI >30kg/m^2) with more dramatic increase upto 30.2% in group with BMI≥35kg/m^2 and 43.1% in patients with BMI >40 kg/m^2.[20]

Similarly a retrospective cohort study conducted at the university college hospital, Galwary, Ireland showed that in comparison women of normal weight, for overweight and obese women there as a progressive reduction in vaginal delivery rate with increasing BMI. For morbid obese gravid patients this reduction was 23.6%(from 86% to 65.7%).[21] These results are comparable with my study that indicates reduction from 86.7% to 66.7%.

CONCLUSION

We are of the view that obesity is an independent risk factor for adverse obstetric outcome and is significantly associated with an increased cesarean delivery rate.

REFERENCES

1. Marks V. Human obesity: its hormonal basis and role of gastric inhibitory polypeptide. Med Princ Part 2006;15:325-37.
2. Raichel L, Sheiner E. Maternal obesity as a risk factor for complications in pregnancy, labor an pregnancy outcomes. Harefuah 2005;144:107-11.
3. Sarwer DB, Allison KC, Gibbons LM, Markowitz JT, Nelson DB. Pregnancy and obesity: a review and agenda for future research. J Women's Health 2006;15:720-33
4. Qidwai W, Azam SI. Knowledge, attitude and practice regarding obesity among patients, at Aga Khan University Hospital, Karachi. J Ayub Med Coll Abbottabad 2004;16:32-4.
5. Nanan DJ. The obesity pandemic---implications for Pakistan. J Pak Med Assoc 2002;52:342-6.
6. Cederqren MI. Maternal morbid obesity and risk of averse pregnancy outcome. Obstet Gynecol 2004;103:219-24.
7. Anna-Maria Siega-Riz, Anna-Maria Siega-Riz, Barbara Laraia. The Implications of Maternal Overweight and Obesity on the Course of Pregnancy and Birth Outcomes. Matern Child Health J. 2006;10(Suppl 1):153–6.
8. Castro LC, Avina RL. Maternal obesity and pregnancy outcomes. Curr Opin Obstet Gynecol. 2002 Dec;14(6):601-6.
9. Langer O. Management of obesity in GDM: old habits die hard. J Matern Fetal Neonatal Med 2008;21:165-71
10. Burstein E, Levy A, Mazor M, Wiznitzer A, Sheiner E. Pregnancy outcome among obese women: a prospective study. Am J Perinatol 2008;25:561-6.
11. Robinson HE, O'Connell CM, Joseph KS, McLeod NL. Maternal outcomes in pregnancies complicated by obesity. Obstet Gynecol 2005;106:1357-64.
12. Weiss JL, Malone FD, Emig D. Obesity, obstetric complication and cesarean delivery rate---a population based screening study. Am J Obstet Gynecol 2004; 190: 1091-7.
13. Kumari AS. Pregnancy outcome in women with morbid obesity. Int J Gynecol Obstet 2001;73:101-7.
14. Dixen JB, Dixen ME, O'Brien PE. Birth outcomes in obese women after laparoscopic adjustable gastric binding. Obstet Gynecol 2005;106:965-72.
15. Yu CK, Teoh TG, Robinson S. Obesity in pregnancy. BJOG 2006;113:1117-25.
16. Leung TY, Leung TN, Sahota DS, Chan OK, Chan LW, Fund TY, et al. Trends in maternal obesity and associated risks of adverse pregnancy outcomes in a population of Chinese women. BJOG 2008;115:1529-37.
17. Galtier-Dereure F, Boegner C, Bringer J. Obesity and pregnancy: complications and cost. Am J Clin Nutr 2000;71:1242S-8S.
18. Grossetti E, Beucher G, Regease A, Lamendour N, Herlicoviez M, Dreyfus M. Obstetrical complications of morbid obesity. J Gynecol Obstet Biol Reprod 2004;33:739-44.
19. Sebire NJ, Jolly M, Harris JP, Wadsworth J, Joffe M, Beard R. Maternal obesity and pregnancy outcome: a study of 287 214 pregnancies in London. Int J Obes 2001;25:1175-82.
20. Stepan H, Scheithauer S, Dornhofer N, Kramer T, Faber R. Obesity as an obstetric risk factor: does it matter in a perinatal center? Obesity (Silver Spring) 2006;14:770-3
21. Lynch CM, Sexton DJ, Hession M, Morrison JJ. Obesity and mode of delivery in primigravid and multigravida women. Am J Perinatol 2008;25:163-7.