ORIGINAL ARTICLE

Obstetric Outcome in Obese Saudi Pregnant Women: A Cohort Prospective Study at a Teaching Hospital

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A B S T R A C T

Objective: The objective of this study was to compare obstetrical outcome in obese women with a body mass index (BMI) ≥29.9 kg/m^2 and women with a normal BMI of 20–24.9 kg/m^2.

Methods: This is a prospective cohort study of 300 Saudi females aged between 20 and 35 years in their first trimester of pregnancy and 300 nonobese pregnant controls attending the King Fahd Hospital of the University, Al-Khobar, Saudi Arabia. Patients with a preexisting disease were excluded from the study.

Results: A significantly higher proportion of obstetrical complications were seen among women with higher BMI compared with those with a normal BMI. The specific complications seen in obese women were gestational hypertension/preeclampsia, antepartum hemorrhage, gestational diabetes, postpartum hemorrhage, cesarean delivery, macrosomia, shoulder dystocia, birth asphyxia, neonatal intensive care admission, premature birth, wound complications and thromboembolism.

Conclusion: Obesity in pregnancy is associated with higher fetomaternal morbidities and a comprehensive plan should be implemented to provide a better outcome for both women and their infants.

Key words: Fetomaternal complications, obesity, obstetrical outcome

ملخص البحث:

تهدف هذه الدراسة للمقارنة بين نتائج الولادة لدى النساء البدينات بمؤشر كتلة جسم أكثر من 29,9 كيلوجرام / متر^2 وأولئك النساء بمؤشر كتلة جسم طبيعي 20 – 24,9 كيلوجرام / متر^2 . تضمنت الدراسة 300 سيدة تراوحت أعمارهن بين 20و35 عاماً في فترة الثلاثة أشهر الأولى من الحمل و300 سيدة بدينة حامل بمستشفى الملك فهد الجامعي بالخبر، المملكة العربية السعودية. خلصت الدراسة إلى أن السيدات البدينات عانين مضاعفات أكثر من أولئك ذي الوزن الطبيعي. تضمنت تلك المضاعفات ارتفاع في ضغط الدم والنزيف وسكر الحمل والولادة القيصرية وغيرها. أوضحت الدراسة أن السمنة أثناء الحمل مرتبطة بمضاعفات للأم وللجنين كما بينت أهمية وضع خطة لتحسين نتائج الولادة لدى الأمهات وأطفالهن.

INTRODUCTION

Obesity has been defined by the World Health Organization (WHO) as a body mass index (BMI) ≥29.9 kg/m^2. Studies have shown that there has been a dramatic rise in obesity in recent years and all gender and age groups, including children and adolescents, are at risk.[1] As shown in Table 1, obesity has been classified into different categories according to the BMI by the WHO.[2] The prevalence rate of obesity has increased from 4% in the period 1999–2004 to 6% during 2011–2012.[3,4] Pregnant women who are obese are particularly at risk of developing high blood pressure, heart disease, diabetes and other complications during pregnancy and postpartum. Obese patients are also

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at an increased risk of having a stillbirth of the infant experiencing shoulder dystocia due to macrosomia.[5] Obese patients often have a high level of anxiety about fetal weight, which when estimated, can increase the risk of induction of labor and cesarean section in this category of patients. Cesarean sections in obese patients are associated with more difficulties, including failed intubation, difficult regional anesthesia, increase in operation time, increased blood loss and a higher risk of wound infection and endometritis. All of these lead to an increase in the length of hospital stay.[6] In addition, there is a higher risk of thromboembolism, genital tract injuries and postpartum hemorrhage ($P < 0.001$). Perinatal outcomes adversely affect and increase the incidence of growth restriction, stillbirth, prematurity and admission to neonatal intensive care units. The most preventable risk for unexplained stillbirth is obesity.[7] Therefore, the objective of this study was to compare the obstetrical outcome between obese women with a BMI ≥29.9 kg/m^2 and nonobese women with a normal BMI of 20–24.9 kg/m^2 [Table 1].[2]

METHODS

This prospective cohort study was conducted at King Fahd Hospital of the University, Al-Khobar, Saudi Arabia, over a period of 2 years from January 2012 to December 2014. The study group included 300 Saudi females aged between 20 and 35 years in their first trimester of pregnancy with a BMI ≥29.9 kg/m^2 and 300 nonobese pregnant controls. The exclusion criteria included a preexisting disease and a BMI <29.9 kg/m^2. A questionnaire was used to collect data, including age, marital status, income, education, last menstrual period and the number of pregnancies. All patients were followed until delivery and complications related to obesity were noted. Multiple logistic regression analysis using Statistical Package of Social Sciences (SPSS Inc., Chicago, IL, USA) to determine the relationship between BMI and pregnancy outcome in the studied cohort.

Table 1: World Health Organization categorization of weight and obesity

BMI	Classification
<18.5	Underweight
18.5–24.9	Normal weight
25.0–29.9	Overweight
30.0–34.9	Class I obesity
35.0–39.9	Class II obesity
≥40.0	Class III obesity

BMI – Body mass index

RESULTS

A total of 300 pregnant patients with a BMI ≥29.9 kg/m^2 and 300 nonobese pregnant females with a BMI <29.9 kg/m^2 were included in the study. Pregnancy outcome of the obese group and the controls revealed that obese patients are at a greater risk of gestational hypertension/preeclampsia (odds ratio [OR] 2.23, 95% confidence interval [CI] 1.16–5.01); antepartum hemorrhage (OR 2.8, 95% CI 1.1–8.2); gestational diabetes (OR 5.10, 95% CI 1.5–9.7); postpartum hemorrhage (OR 2.5, 95% CI 1.8–4.30); cesarean delivery (OR 4.8, 95% CI 1.5–6.4); macrosomia (OR 3.9, 95% CI 1.7–8.6); shoulder dystocia (OR 3.19, 95% CI 1.3–5.6); birth asphyxia of severe degree (OR 2.9, 95% CI 1.1–6); neonatal intensive care admission (OR 2.1, 95% CI 1.2–4.9); premature birth (OR 2.2, 95% CI 1.4–3.9); wound complications (OR 2.8, 95% CI 1.7–5.4) and thromboembolism (OR 5.2, 95% CI 2.1–8.9) [Table 2].

DISCUSSION

Obesity in pregnancy presents challenges for the obstetrician due to difficulties related to monitoring

Table 2: Obstetrical outcome among obese Saudi nulliparous women

Complications	Proportion in obese women (%)	Proportion in healthy women (%)	OR	95% CI	*P*
Hypertension and preeclampsia	6.8	2.5	2.2	1.3–6	<0.01
Gestational diabetes	2	0.03	4.24	1.6–11	<0.05
Preterm birth	15	7.1	2.3	1.2–4.4	<0.001
Cesarean delivery	33	15	2.5	1.3–5.6	<0.002
Fetal macrosomia	43	15	5.08	1.6–5.4	<0.001
Postpartum hemorrhage	5.1	2	4.1	1.3–6	<0.001
Shoulder dystocia	2	1	2.25	1.5–5	<0.001
Thromboembolism	10	1.8	3.20	1.6–11	<0.001

OR – Odds ratio; CI – Confidence interval

blood pressure, fundal height and fetal growth. Anomaly and growth scans are suboptimal, particularly anomalies related to the heart, spine and kidneys, which increases the risk of undetectable anomalies.[8] Studies have shown that there is a twofold increase in neural tube defects in fetuses of obese mothers.[9] Our results revealed that antenatal complications such as hypertension/preeclampsia and HELLP syndrome occurred in 12% of the obese study group, compared to 2% ($P < 0.01$) in the control group, which is in line with other studies.[10] Similarly, we found that 7–15% of the obese patients suffered from gestational diabetes compared with 2% ($P < 0.005$) in the control group. An increase in physical activity can decrease the risk of gestational diabetes in obese patients.[11] Early screening for these conditions is essential for pregnant women, particularly those who are obese.[12,13]

CONCLUSION

This study shows an association between maternal obesity and higher fetomaternal complications compared with nonobese patients, which places a burden on health resources. Therefore, it is important to implement measures to minimize obstetrical risk through the following:

- Before pregnancy, women should undergo periodic health examinations
- The BMI should be calculated for each pregnant patient at the initial hospital visit
- Obese females who are of child-bearing age should receive counseling about weight gain, nutrition and food selection
- Obese pregnant females should be informed of the risk of fetomaternal complications and measures to prevent them
- Obese patients should be seen by an anesthetist during the early stages of labor to reduce risk of difficult regional anesthesia or failed intubation
- Prophylaxis for thromboembolism and early mobilization should be considered in the immediate postpartum period to avoid thromboembolic complications

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Flegal KM. The obesity epidemic in children and adults: Current evidence and research issues. Med Sci Sports Exerc 1999;31: S509-14.
2. Statistics Canada. Adult Obesity in Canada: Measured Height and Weight; 2005. Available from: http//www.Calgary health region. Ca/Programme/Childbesity/article/Adult. Adults/8060.eng.htm. [Last accessed on 2010 Jan 06].
3. Skinner AC, Skelton JA. Prevalence and trends in obesity and severe obesity among children in the United States, 1999-2012. JAMA Pediatr 2014;168:561-6.
4. Skelton JA, Cook SR, Auinger P, Klein JD, Barlow SE. Prevalence and trends of severe obesity among US children and adolescents. Acad Pediatr 2009;9:322-9.
5. Henriksen T. The macrosomic fetus: A challenge in current obstetrics. Acta Obstet Gynecol Scand 2008;87:134-45.
6. Vasudevan A. Pregnancy in patients with obesity or morbid obesity: Obstetrical and anesthetic implications. Bariatr Times 2010;7:9-13.
7. Fretts RC. Etiology and prevention of stillbirth. Am J Obstet Gynecol 2005;193:1923-35.
8. Hendler I, Blackwell SC, Bujold E, Treadwell MC, Mittal P, Sokol RJ, *et al*. Suboptimal second-trimester ultrasonographic visualization of the fetal heart in obese women: Should we repeat the examination? J Ultrasound Med 2005;24:1205-9.
9. Rasmussen SA, Chu SY, Kim SY, Schmid CH, Lau J. Maternal obesity and risk of neural tube defects: A metaanalysis. Am J Obstet Gynecol 2008;198:611-9.
10. Weiss JL, Malone FD, Emig D, Ball RH, Nyberg DA, Comstock CH, *et al*. Obesity, obestetric complications and cesarean delivery rate--a population based screening study. Am J Obstet Gynecol 2004;190:1091-7.
11. Zhang C, Solomon CG, Manson JE, Hu FB. A prospective study of pregravid physical activity and sedentary behaviors in relation to the risk for gestational diabetes mellitus. Arch Intern Med 2006;166:543-8.
12. Berger H, Crane J, Farine D, Armson A, De La Ronde S, Keenan-Lindsay L, *et al.* Screening for gestational diabetes mellitus. J Obstet Gynaecol Can 2002;24:894-912.
13. Inge TH, Courcoulas AP, Jenkins TM, Michalsky MP, Helmrath MA, Brandt ML, *et al.* Weight loss and health status 3 years after bariatric surgery in adolescents. N Engl J Med 2016;374:113-23.