

DOES THE INCREASE IN BODY MASS INDEX CAUSE MORE OBSTETRIC PROBLEMS?

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ABSTRACT

Introduction: There has been a dramatic increase in the prevalence of obesity in the past 2 decades almost in all over the world. The purpose of this study was to investigate the effect of body mass index (BMI) increase on obstetric outcomes. **Material and Methods:** Women with singleton pregnancies and deliveries at the obstetric department in Baskent University between May 2004 and August 2005 were included in the study. BMI was calculated prepregnancy and at delivery and the relationships between prepregnancy BMI, delivery BMI and gestational weeks, preterm rupture of membranes (PROM), preterm labor, stages of labor, meconium staining, type of labor, birth weights, birth sexes, postoperative complications were compared. **Results:** This study included 317 women; 76.2% of women were in normal, 2.4% of them was in obese group prepregnancy. There were no relationships between gestational weeks, type of labor, meconium staining, preterm labor, duration of labor stages, birth weights, postpartum complications, birth sexes, PROM and both initial and delivery body mass indexes statistically ($P>0.05$). **Discussion:** Although our results did not support the adverse effects of advanced weight gain, dietary counseling should be offered to the pregnancies.

Key words: body mass index, obesity, pregnancy outcome

ÖZET

Vücut Kitle İndeksindeki Artış Daha Fazla Obstetrik Problemlere mi Yol Açıyor?

Giriş: Son 20 yıl içinde obezite prevalansında tüm dünyada bir artış vardır. Bu çalışmanın amacı obstetrik sonuçlar üzerine vücut kitle indeksinin etkisini araştırmaktır.

Materyal Metot: Mayıs 2004-Ağustos 2005 tarihleri arasında Başkent Üniversitesi Konya Araştırma ve Uygulama Merkezi Obstetrik Bölümü'ne başvuran tekil gebelikler çalışmaya dahil edildi. Vücut kitle indeksi (VKİ) gebelik öncesi ve doğum zamanında hesaplandı ve gestasyonel hafta, erken membran ruptürü, preterm eylem, doğum eyleminin süresi, mekonyum varlığı, doğum şekli, bebeğin kilosu, bebeğin cinsiyeti, postpartum komplikasyon varlığı ile ilişkisi incelendi.

Sonuçlar: Çalışmaya, 317 kadın hasta dahil edildi. Gebelik öncesi, %76.2'si normal; %2.4'ü obes gruptaydı. Mekonyum varlığı, preterm eylem, doğum eyleminin süresi, doğum kiloları, postpartum komplikasyonları, bebek cinsiyeti, bebek kilosu, erken membran ruptürü (EMR) ile gebelik öncesi ve doğumdaki VKİ arasında ilişki gözlenemedi ($p>0.05$).

Tartışma: Sonuçlarımız, gebelikte fazla kilo alımının olumsuz etkisinin olmadığını gösterse de, gebelere diet önerilerinde bulunmak gerekir.

Anahtar kelimeler: gebelik sonuçları, obezite, vücut kitle indeksi

INTRODUCTION

There has been a dramatic increase in the prevalence of obesity in the past 2 decades almost worldwide. Maternal obesity has been associated with adverse perinatal outcomes. These are: gestational diabetes, preeclampsia, infections, operative vaginal delivery and cesarean delivery with higher blood loss, more cases of shoulder dystocia and cephalopelvic disproportion and probably intrapartum fetal deaths (1-3). Also weight gain above recommendations during pregnancy is associated with increasing adverse perinatal outcomes⁽⁴⁾.

The aim of the present study was to investigate the effect of prepregnancy Body Mass Index (BMI) and BMI increase during pregnancy on obstetric outcomes.

MATERIAL AND METHODS

Three hundred and seventeen women with singleton pregnancies and deliveries at the obstetric department in Baskent University Konya Research and Education Center between May 2004 and August 2005 were included in the study. Women who had multiple pregnancies, systemic diseases (103 patients) were excluded from the study. And pregnancies who never received antenatal care and came only for delivery (57 patients) were also excluded. BMI [weight (kg)/height x height (m)] was calculated at first prenatal visit and at delivery. Generally Turkish women don't have any tendencies to weigh themselves before pregnancy. So calculating prepregnancy BMI became problem and finally we accepted BMI at first prenatal visit as a prepregnancy BMI. Of course this value never shows the real prepregnancy BMI, because some women initiate prenatal care in the second trimester. Delivery BMI, mean weight gain and BMI category changes were also calculated.

BMI was calculated prepregnancy and constructed the following 3 categories: normal, BMI 20-24.9; overweight, BMI 25-29.9; obese, BMI \geq 30. BMI category at first visit was compared with gestational weeks, existence of preterm labor, PROM stages of labor, meconium staining, types of delivery, birth sexes, birth weights, and postoperative complications. Also the differences between prepregnancy BMI and delivery BMI were analyzed with the same variables.

One-way analysis of variance (ANOVA) was used to evaluate differences in continuous variables across the groups. Chi-square or Fisher exact tests was used for categorical variables. 'P' value <0.05 was considered significant.

From maternity records at our hospital, information was collected retrospectively on maternal age, height, parity, pregnant weight and any systemic diseases the patients had.

RESULTS

This study included 317 women. There was no clinical difference in age, or gestational age between groups. The mean age was 29.2 ± 4.3 , mean gravidity was 2.3 ± 1.4 and mean gestational week was 38.4 ± 1.8 . Mean prepregnancy BMI was 24.2 ± 4.0 kg/sq m, delivery time BMI 28.4 ± 3.0 kg/sq m (Table I). Prepregnancy BMI category was as follows: 76.2% of women were in normal, 21.4% in overweight and 2.4% of them were in obese group; 48.4% of women were delivered by vaginal route; mean birth weight of the babies were 3325 ± 534.5 kg; 57.5% of them were male; 97.5% of women did not have any postpartum complications. Twenty-two (7.2%) deliveries had meconium staining; 45 pregnancies (14.2%) had preterm labors and 14 (4.4%) had PROM. All delivered healthy babies.

Table I: Demographic parameters

	Min	Max	Mean	Std Dev.
Age	18	44	29.2	4.3
Gravidity	1.0	8.0	2.3	1.4
Prepregnancy BMI	18.8	33.3	24.2	4.0
Delivery time BMI	22.0	37.0	28.4	3.0
Gestational Weeks	32.0	41.0	38.4	1.8

The prepregnancy BMI groups were crossed with the variabilities such as meconium staining, preterm labor, duration of labor stages, types of deliveries, birth weights, sexes, PROM and postpartum complications. But no relationship was found between the prepregnancy BMI groups and these variabilities ($p > 0.05$).

Delivery BMI groups were analyzed. Delivery BMI

category was as follows: 71.4% of women were in normal, 23.9% in overweight and 4.7% of them were in obese group. According to prepregnancy BMI categories, 2.5% of category 1 patients were included in category 2; whereas 0.8% of category 2 were included in category 3 and 1.5% of category 1 patients were included in category 3 at delivery.

Women with no change in BMI category gained 8.6 ± 5.3 kg, women who increased by 1 category gained 22.2 ± 8.4 kg and women with greater than 1 category increase gained 30.4 ± 12.6 kg.

No associated increased rates of postpartum complications, preterm labor, PROM and meconium staining between prepregnancy and delivery BMI category changed women ($p>0.05$).

DISCUSSION

Obesity is a growing problem in the world. It is known that maternal obesity is an important contributing factor in the development of chronic hypertension, preeclampsia, pregestational and gestational diabetes, macrosomic infants and childhood obesity⁽⁵⁾. There are so many reports about this subject.

In this study some more different variables' relationships, meconium staining, existence of preterm labor and PROM, duration of labor stages, sexuality of babies, between prepregnancy and delivery BMI were intended to compare.

Kabiru reported that increase in BMI category was associated with increased risk of complications. This study was the first one which investigated pregnancy weight gain in terms of change in BMI categories and perinatal complications⁽⁴⁾.

Thorsdottir et al reported that the frequency of delivery complications was lowest in the group with the recommended weight gain⁽⁶⁾.

In the present study a significant proportion of women had normal body weight prepregnancy (76.2%). At delivery this ratio was 71.4%. Nearly 5% of

pregnancy normal BMI women were included in overweight or obese groups at delivery. Perhaps this small increase was on account of most of our patients' tendency to follow up their routine antenatal visits. If all the deliveries had been included to the study, the results would have been more different.

On the contrary of other reports, we could not get any positive correlations between weight gain and pregnancy outcomes that mentioned before. Of course this doesn't mean that we can give permission to the pregnancies to become overweight. The relationships of gestational diabetes, preeclampsia, wound healing and obesity which were reported in the other similar reports must be in mind.

Although the results did not support the adverse effects of advanced weight gain during pregnancy, educating women about appropriate weight gain during pregnancy is important. Closer provider monitoring of pregnancy weight gain, dietary counseling and interventions could decrease perinatal morbidity.

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