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The Effects of Gender on Cesarean Rate and Birth Weight in Cases Without Risk Factors

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Abstract

Objective: To investigate the effects of gender on cesarean rate and birth weight in cases without risk factors.

Methods: In this study, we have retrospectively evaluated the outcome of pregnancies of which cesarean section was performed because of fetal stress, between 2003 and 2008 in Zekai Tahir Burak Women Health and Education Hospital. High-risk pregnancies were excluded in the study. Maternal ages, gestational weeks, number of pregnancies, fetal birth weight, gender, and Apgar scores of all cases were analyzed. All data were evaluated by the Logistic Regression Analyses. The minimum limit for significance was accepted as 0.05.

Results: A total of 1747 pregnancies were evaluated. One thousand and twenty-six (58.7%) of them had male fetuses and 721 (41.3%) of them had female fetuses. Apart from most pregnancies terminated with Cesarean section because of fetal distress being male fetuses, 73.2% of babies, over 4000 grams were male and when compared with female fetuses (26.8%) the incidence was 3 times higher. When the newborns, whose Apgar score at the 1st minute ≤ 6 were evaluated, 62.8% of them were males and this incidence was twice higher than female fetuses (37.2%) ($P < 0.05$).

Conclusion: Fetal distress risk during labor is higher for male fetuses. In addition, neonatal morbidity is also higher. Fetal birth weight being higher than 4000 grams is also more frequent among male fetuses.

Keywords: Fetal distress, fetal gender, perinatal morbidity.

Risk faktörü olmayan olgularda cinsiyetin sezaryen hızına ve doğum ağırlığına etkisi

Amaç: Risk faktörü olmayan olgularda cinsiyetin sezaryen hızına ve doğum ağırlığına etkisinin araştırılması.

Yöntem: Bu çalışmada Mart 2003-Haziran 2008 yılları arasında Zekai Tahir Burak Kadın Sağlığı Eğitim ve Araştırma Hastanesinde, fetal distres gelişimi üzerine gebelikleri sezaryen ile sonlandırılan gebelerde gebelik sonuçları retrospektif olarak incelenmiştir. Çalışma kapsamına yüksek riskli gebeler alınmamıştır. Tüm vakaların maternal yaşları, gestasyonel haftaları, gebelik sayıları, fetal doğum ağırlıkları, cinsiyetleri ve Apgar skorları incelenmiştir. Tüm veriler Lojistik Regresyon Analizi kullanılarak değerlendirilmiştir.

Bulgular: İncelenen 1747 gebenin 1026'sı (%58.7) erkek fetusa, 721'i (%41.3) kız fetusa sahiptir. Fetal distres nedeniyle gebelikleri sezaryan ile sonlandırılan gebelerin çoğunun erkek fetusa sahip olmalarının yanı sıra, 4000 gr. üstünde doğan bebeklerin%73.2'si erkek olup bu oran kız fetusların (%26.8) yaklaşık 3 katıdır. 1. dakika Apgar skoru 6 olan yenidoğanların da%62.8'inin erkek olduğu saptanmış olup bu oran kız fetusların (%37.2) yaklaşık iki katıdır ($p < 0.05$).

Sonuç: Erkek fetusların doğum eylemi sırasında strese girme olasılığı ve neonatal morbiditesi daha fazladır. Bu durum aynı zamanda erkek fetuslardeki 4000 gr üstünde doğum ağırlığının daha yüksek oranda olmasıyla da uyumludur.

Anahtar Sözcükler: Fetal distres, fetal cinsiyet, perinatal morbidite.

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Introduction

It is known that during pregnancy, starting from conception and ending with labor, pregnancy complications like spontaneous abortus, intrauterine exitus, early membrane rupture and preterm delivery associate male fetuses.[1-5]

Fetal distress which can develop during labor and problems at the early neonatal period are important reasons of neonatal mortality and morbidity at the neonatal period, following prematurity.[1,3] Among all pregnancies, the fetal gender of the spontaneous abortus and intrauterine exitus cases is predominantly male[2,3,6,7] Nevertheless, earlier studies demonstrated that the risk of fetal distress was higher in pregnancies carrying male fetuses.[1,2,4] Several possibilities were suggested at various studies, in order to explain the reason of this association, however, the most possible reason seemed to be the fetal birth weights of male fetuses being higher than female fetuses.[1,3,4,8]

In our study, the outcome of pregnancies that Cesarean section performed because of fetal distress development at term and spontaneous labor was prospectively evaluated.

Methods

The records of cesarean sections performed at term, spontaneous labor, upon the indication of fetal distress at Zekai Tahir Burak Mother Health Training and Research Hospital between the March 2003-June 2008 were evaluated retrospectively. High-risk pregnancies (preeclampsia, intrauterine growth retardation, multiple pregnancies, preterm labor, presentation abnormalities) were excluded. Maternal ages, gestational weeks, number of pregnancies, fetal birth weights, gender, and Apgar scores at the 1st and 5th minutes were recorded for all cases. Fetal distress indication was depended on the external fetal monitorization performed during labor.

A total of 1747 pregnancies were included in our study and they were not only analyzed in terms of gender, but parameters like age, number of pregnancies, fetal birth weight, all of which could contribute to the development of fetal distress were also taken into account. All these parameters were compared by the Logistic Regression Analysis. P<0.05 was accepted as statistically significant.

Table 1. Maternal demographic and pregnancy characteristics.

Fetal gender	Male fetus (n = 1026)	Female fetus (n =721)
Maternal Age, years (median)	24±8.3	25±6.6
Gravidity	2.7±1.8	2.8 ±1.4
Gestational age, weeks, day (median)	39±4	39±6
Primigravid	588 (53.3%)	416 (41.4%)
Multigravid	438 (59%)	305 (41%)
Fetal Birth Weight		
<2500 g	56 (53.3%)	49 (46.7%)
2500-4000 g	888 (58%)	642 (42%)
>4000 g	82 (73.2%)	30 (26.8%)

Table 2. The relationship between fetal gender and fetal birth weight.

	Gender			
Fetal birth weight	**Male**	**Female**	**Total**	**P value**
< 2500 g	56 (53.3%)	49 (46.7%)	105	0.63
2500 - 4000 g	888 (58%)	642 (42**%**)	1530	0.76
> 4000 g	**82 (73.2%)**	**30 (26.8%)**	**112**	**0.004**
Total	1026	721	1747	

Results

A total of 1747 pregnancies were included in the study. All pregnancies included in the study were performed Cesarean section in terms of the fetal distress indication. Patient characteristics in terms of pregnancy and demographic characteristics are given at Table 1.

Among a total of 1747 pregnancies, 1026 (58.7%) had male and 721 (41.3%) had female fetuses, thus the majority of fetuses were male. While there were no differences among pregnancies with male and female fetuses in terms of age, number of pregnancy, and gestational age, when fetal birth weight was evaluated, we observed that rate of macrosomic fetus was higher among male newborns. When newborns with a fetal birth weight equal to or higher than 4000 grams were evaluated, 73.8% of them were male (8 % of all male newborns) and 26.8 % of them were female (4.2% of all female newborns) and this difference was statistically significant ($p<0.05$) (Table 2,3) (Graph 1).

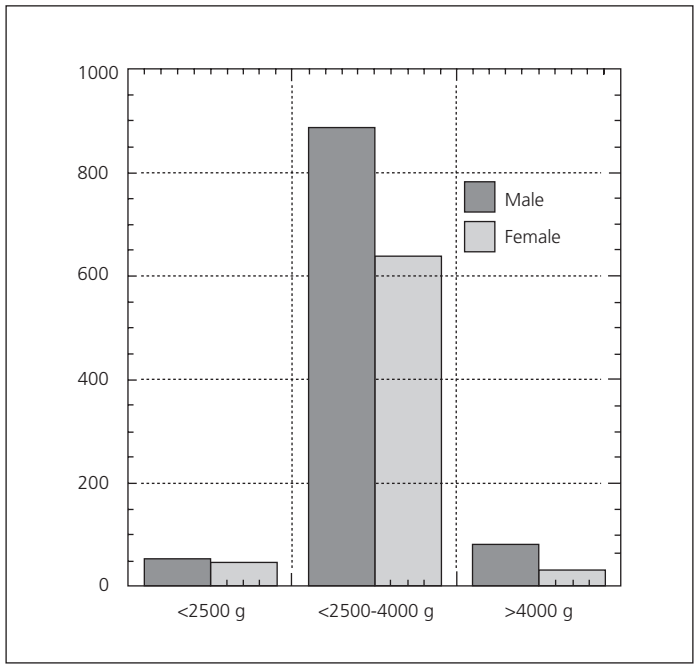
The 1st and 5th minute Apgar scores of the male and female fetuses were examined. When the distribution of Apgar scores of 1747 newborns were compared in terms of gender, significant differences were observed. When the newborns whose 1st minute Apgar score ? 6 were examined, 62.8 % (279) of them were male and 37 % (165) were female and the difference had statistical significance ($p < 0.05$) (Table 4) (Graph 2). When the newborns whose 5th minute Apgar score ? 6 were examined, 56.5 % (26) of them were male and 43.5 % (20) were female and the difference was not statistically significant. The 5th minute Apgar score was "0" for only one newborn and this case was a male (the 1st minute Apgar score of this newborn was "1" and his fetal birth weight was 4010 grams).

Table 3. Distribution of fetal gender in terms of fetal birth weight.

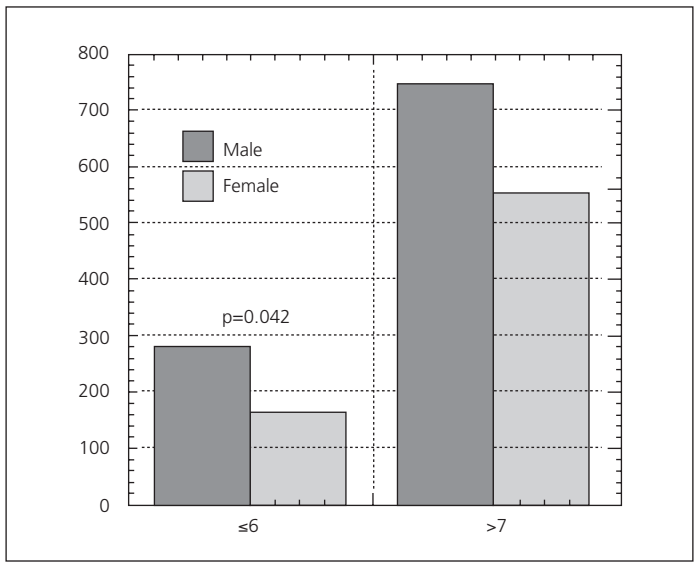
Gender	**<2500 g**	**2500-4000 g**	**>4000 g**
Male (n=1026)	56 (5.5%)	888 (86.5%)	82 (8%)
Female (n=721)	49 (6.8%)	642 (89%)	30 (4.2%)
Total n=1747	105 (6.0 %)	1530 (87.6 %)	112 (6.4 %)
			p<0.05

Discussion

We examined a total of 1747 cases and they showed us that during labor the risk of fetal distress is higher for boys than girls. In a previous study by Lieberman et al the rates of cesarean section and fetal distress were significantly higher among male fetuses.[4] Bekedam et al reported significant results in a larger study that evaluated only fetal distress.[3]



Graph 1. The relationship between fetal birth weight and fetal.



Graph 2. Distribution of 1st minute Apgar scores in terms of fetal gender.

In our study, apart from fetal distress, we demonstrated that the incidence of male fetuses increases in the newborn population whose fetal birth weight is equal to or higher than 4000 grams and this finding is in accordance with the study of Lieberman et al.[4] It is believed that the arrested labor due to macrosomic fetus contributes to the development of fetal distress.

Herman suggested that Y chromosome affects fetal growth rate thus making the male fetus macrosomic and increasing the metabolic rate.[9] This high metabolic rate may make male fetuses more susceptible to the critical alterations that can develop during labor. The risk of fetal stress being higher for male fetuses can not be illuminated unAs a result, we demonstrated that fetal distress during labor is higher in male fetuses and perinatal morbidity is increased. Our case number is small thus our findings can not influence the present clinical practice but obstetricians should be more careful and ready for the complications that they can face during prenatal care. It is important that when fetal gender is assessed with ultrasound performed during prenatal care practices, the family should be informed and the obstetrician should be alert especially during the 3rd trimester. male fetuses is lower than females. In the study of Lieberman et al both the 1st and the 5th minute Apgar scores were significantly lower in males.[4] Depending on this, neonatal morbidity rates of the male fetuses increase.

Conclusion

As a result, we demonstrated that fetal distress during labor is higher in male fetuses and perinatal morbidity is increased. Our case number is small thus our findings can not influence the present clinical practice but obstetricians should be more careful and ready for the complications that they can face during prenatal care. It is important that when fetal gender is assessed with ultrasound performed during prenatal care practices, the family should be informed and the obstetrician should be alert especially during the 3rd trimester.

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