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POLİKİSTİK OVER SENDROMUNUN OBSTETRİK SONUÇLAR ÜZERİNE ETKİSİ
EFFECT ON OBSTETRIC RESULTS OF POLYCYSTIC OVARY SYNDROMEHASAN ULUBASOĞLU¹MERYEM KURU PEKCAN¹GAMZE YILMAZ¹GÜLNUR ÖZAKŞİT¹ÖZLEM MORALOĞLU TEKİN¹ Orcid ID: 0000-0001-9157-0612 Orcid ID: 0000-0002-4144-2900 Orcid ID: 0000-0001-8021-7653 Orcid ID: 0000-0001-9117-9728 Orcid ID: 0000-0001-8167-3837¹ Department of Obstetrics and Gynecology , University of health sciences ,Ankara Bilkent City Hospital, Ankara. Turkey

ÖZ

Amaç: Bu çalışmanın amacı polikistik over sendromu (PCOS)'nun obstetrik ve neonatal sonuçlar üzerine etkisini araştırmaktır.

Gereçler ve Yöntem: Bu çalışma, 2020-2021 yılları arasında Ankara Şehir Hastanesi kadın doğum kliniğinde randomize kontrollü prospektif olarak gerçekleştirildi. Toplamda 101'i Polikistik over sendromlu ve 99'u sağlıklı kontrol olmak üzere toplam 200 gebe (18-45 yaş) dahil edildi. Grupların demografik özellikleri analiz edildi. Gebe grubunun sistolik kan basıncı, diyastolik kan basıncı, insülin direnci, ovulasyon indüksiyonu, inseminasyon ve yenidoğan ünitesine takip amaçlı kabul oranları değerlendirildi. Her iki grup arasında anne yaşı, fetal doğum ağırlığı, gravida, parite, BMI, gebelik haftası, ultrasona göre gebelik haftası, gebelerin boyu, kilosu, vücut kitle indeksi, gebelikte alınan kilo, hemoglobin değerleri karşılaştırıldı.

Bulgular: PCOS'lu gebelerde ovulasyon indüksiyonu, inseminasyon ve takip amaçlı yenidoğan ünitesine kabul oranları açısından anlamlı farklılık bulundu. PCOS'lu gebelerde ovulasyon indüksiyonu, inseminasyon ve yenidoğan ünitesine kabul oranları daha yüksek bulundu. PCOS'lu gebelerde sezaryen oranlarının daha yüksek olduğu görüldü.

Sonuç: PCOS 'lu gebelerin sezaryen olma ve yenidoğanlarının takip için yenidoğan ünitesine kabul oranları daha yüksek olabilir. Bu durum gebelerin yönetiminde dikkate alınmalıdır.

Anahtar Kelimeler

Gebelik, polikistik over, obstetrik ve neonatal sonuç

Effect On Obstetric Results Of Polycystic Ovarian Syndrome

ABSTRACT

Aim: The aim of this study is to investigate the effect of polycystic ovarian syndrome (PCOS) on obstetric and neonatal outcomes.

Materials and Method: This study was conducted as a prospective cohort study at Ankara City Hospital obstetric clinic between 2020-2021. Total included a total of 200 pregnant women (18-45 years), of whom 101 had PCOS and 99 were healthy controls. Demographic characteristics of the groups were analyzed. The systolic blood pressure, diastolic blood pressure, insulin resistance, ovulation induction, insemination and newborn admission rates of the pregnant group were evaluated. Maternal age, fetal birth weight, gravidity, parity, BMI, gestational age, gestational age according to ultrasound, women height, weight, (BMI), weight gained during pregnancy, hemoglobin values were compared between both groups.

Results: In terms of the rates of ovulation induction, insemination, and admission to the neonatal unit for follow-up in pregnant women with PCOS were significant different found. Pregnant women with PCOS had higher rates of ovulation induction, insemination, and admission to the neonatal unit for follow-up. It was observed that cesarean section rates were higher in pregnant women with PCOS.

Conclusion: It should be considered that pregnant pregnant with PCOS are more likely to have a cesarean section and their newborn's are more likely to be admitted to the newborn unit for follow-up. This situation should be taken into consideration in the management of pregnant women.

Keywords: Pregnancy, polycystic ovary, obstetric and neonatal outcome**Sorumlu Yazar/ Corresponding Author:** Hasan Ulubasoglu**Adres:** Address for correspondence: Üniversiteler Mahallesi Bilkent Cad. No:1 Çankaya/ANKARA**E-mail:** h.ulubas@hotmail.com

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INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common female endocrinopathy. The main criteria for the diagnosis of polycystic ovary syndrome are menstrual irregularity, hirsutism and obesity. The European Society of Human Reproduction and Embryology (ESHRE)/American Society of Reproductive Medicine (ASRM) Consensus workshop standardized the diagnosis of PCOS in 2003. To diagnose PCOS, at least two of the following three criteria must be present. These are oligoanovulation, clinical or biochemical signs of hyperandrogenism, and polycystic ovaries detected by ultrasound (1,2). For this diagnosis, other pathologies with similar clinical features should be excluded (3).

Since the cycles of patients with PCOS are anovulatory, the infertility seen in them is anovulatory infertility. Studies have shown that PCOS has an effect not only on the reproductive system but also on pregnancy. After ovulation induction in patients with PCOS, the risks associated with multiple pregnancies have increased. For this reason, studies have been conducted regarding the obstetric complications of pregnant women with PCOS. But the number of these studies is quite limited (4).

PCOS is also associated with metabolic syndromes resulting from B cell dysfunction. This endocrine disorder increases cardiovascular and metabolic risks in later years of life (5,6). Insulin resistance in pregnant and non-pregnant women has been reported in many reports. Pregnant women with PCOS have a higher incidence of obstetric and neonatal complications than those without PCOS. It has been associated with increased rates of gestational diabetes, hypertensive pregnancy disorders, and preeclampsia. These pathologies alone may contribute to increased adverse birth and neonatal risks (7,8). There is heterogeneity on pregnancy outcomes of PCOS in the literature. Therefore, the effect of PCOS on pregnancy outcomes hasn't been fully known (9,10).

This study aimed to evaluate the obstetric and neonatal outcomes of pregnant women with PCOS.

MATERIAL AND METHOD

This study was conducted as a prospective cohort at Ankara City Hospital obstetric clinic between 2020-2021. The study protocol was approved by the Ankara City Hospital ethics committee in terms of conformance to the principles of the Declaration of Helsinki (Approval number: E1-20-297). Pregnant women diagnosed with PCOS between the ages of 18-45 were included in the study. PCOS diagnosis of pregnant women is based

on the Rotterdam criteria (oligo or anovulation, menstrual irregularity, hirsutism, infertility due to anovulation, clinical or biochemical hyperandrogenism, at least one of the following: serum luteinizing hormone/follicle stimulating hormone ratio >2 , elevated testosterone, free testosterone, androstenedione, dehydroepiandrosterone sulphate (DHEAS); and ultrasonographically polycystic ovary appearance. Body mass index (BMI) is classified according to these criteria: If woman's pre pregnancy BMI is above than 30 it is classified as obese category. If woman's pre pregnancy BMI is below than 30 it is classified as normal body weight. The diagnosis of insulin resistance in patients is based upon clinical findings (hyperinsulinemia with normal or high blood glucose, hyperglycemia, Dyslipidemia)

In our research, we included patients who have PCOS before their pregnancy and hospitalized for labor. Patients are informed about our trial, they gave consent about this trial. Those with congenital adrenal hyperplasia, Cushing's syndrome, androgen-secreting tumors, those using oral contraceptives or another hormonal drug, those with abnormal thyroid or prolactin tests, and those with additional diseases were excluded from the study.

The control group consisted of patients who were admitted to the delivery service for delivery and had regular pre-pregnancy menstrual periods without any comorbidities or complaints of increased hirsutism and acne.

Data collected indications on admission to NICU included transient tachypnea of the newborn, respiratory distress syndrome, meconium aspiration, congenital pneumonia, early sepsis, neonatal asphyxia, congenital heart disease, pneumothorax, cyanotic events, jaundice requiring phototherapy, hypoglycemia, hypothermia, nutritional intolerance.

Maternal characteristics and obstetrics results were compared between pregnant women with PCOS and non PCOS.

STATISTICAL ANALYSE :

Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS v. 22, IBM, SPSS for Windows, NY: IBM Corp.). Descriptive statistics were presented as median and inter quartile range values for non-normally distributed variables. Median values were compared using the Mann-Whitney U-test for non-normally distributed data and Student's t-test used for normally distributed variables. According to the analysis performed with ClinCalc, a total of 200 patients, 101 in PCOS group, 99 in control group were required to achieve 95% power, p value of 0.05.

RESULTS

The study included a total of 200 pregnant women (18-45 years), of whom 101 had PCOS and 99 were healthy controls. There was no statistically significant difference between the two groups in terms of maternal age, fetal birth weight, gravidity, parity, BMI, gestational age, gestational age according to ultrasound, women height, weight, weight gained during pregnancy, hemoglobin ($p > 0.05$). When the demographic results of pregnant women with PCOS were compared with healthy pregnancy data, the systolic blood pressure, diastolic blood pressure and insulin resistance of the pregnant group were found to be significantly higher women in the PCOS. Ovulation induction, insemination rate and newborn admission rates were higher in the PCOS group ($p < 0,05$). This was statistically significant. Demographic characteristics of pregnant women with PCOS are shown in Table 1.

Table:1 Demographic Characteristics of Study Groups

	Control Group 99(n)	PCOS Group 101(n)	P value
Age (years)	28.25 ± 6,2	26.5 ± 5,8	0.520
Gravida	1.6 ± 0,9	1.6 ± 0,9	0.84
Parity	0.45 ± 0.78	0.44 ± 0.78	0.93
Gestational age at delivery	39,2 ± 3,02	39.4 ± 1.3	0.34
Pregnancy ultrasound week	37.1 ± 1,4	37.1 ± 1.19	0.89
Maternal length (cm) (mean ± SD)	164.2 ± 7.4	164.4 ± 7.5	0.94
Maternal weight (kg) (mean ± SD)	76.3 ± 12.07	76.8 ± 11.2	0.39
Maternal Systolic blood pressure	118.8 ± 13.6	139.9 ± 15.8	P<0.05
Maternal Diastolic blood pressure	64.4 ± 7.7	88.3 ± 4.7	P<0.05
Insulin resistance	25(n)	57(n)	P<0.05
Hypertension	25(n)	35(n)	0.17
Weight gained during pregnancy	12.6 ± 4.6	12.1 ± 4.4	0.57
Hemoglobin	11.4 ± 1.15	11.1 ± 1.4	1.160
BMI	21.8 ± 2.5	22.5 ± 2.7	0.109

Abbreviation: SD, standard deviation.; BMI, body mass index ; CM, centimeter; KG, kilogram; p value <0.05 is considered as statistically significant.

Obstetric results of pregnant women with PCOS were evaluated. Newborn hospitalization and cesarean section rates was found to be higher. The difference was statistically significant. There was no significant difference in the first- and fifth-minute apgar scores, height, weight, gender and head circumference of the newborns between both groups. In our study, pregnant women with PCOS were not associated with poor obstetric outcomes in terms of Apgar scores, height, weight and head circumference. In terms of the rates of ovulation induction, insemination, and admission to the neonatal unit for follow-up in pregnant women with PCOS were significant different found. Pregnant women with PCOS had higher rates of ovulation induction, insemination, and admission to the neonatal unit for follow-up. Table:2

Table:2 Obstetric Results of Pregnants with Pcos

	Control group 99(n)	PCOS group 101(n)	P value
Cesarean section	15(n)	36(n)	P<0,05
Apgar score I (mean ± SD)	7.7 ± 0,9	7.3 ± 0.9	0.14
Apgar score 5 (mean ± SD)	9.4 ± 0.5	9.2 ± 0.4	0.21
Fetal weight (mean ± SD)	3349 ± 394	3319 ± 385	0.59
Fetal gender	Girl (n):38 Boy (n) :61	Girl (n):46 Boy (n):55	0,30
Fetal length (mean ± SD)	50.1 ± 3.13	49 ± 2.4	0.63
Fetal head circumference (mean ± SD)	34.8 ± 2.6	34.8 ± 1.3	0.88
Ovulation induction	13 (n)	64(n)	0,00
Intrauterine insemination	11 (n)	31(n)	0.01
Admission to the neonatal unit	12(n)	33(n)	0.00
Congenital anomalies	0	0	

DISCUSSION

The prevalence of PCOS varies between 3-20%, depending on the diagnostic criteria used. Studies have shown increased risks of cesarean section, preterm birth and increased risks in newborn infants in women with PCOS (11). Some studies have failed to show such increased risks (12). Studies evaluating preterm birth, increased labor induction and cesarean section rates on women with PCOS have been published in the literature (13,14). Unfortunately, there may be different data in the scientific literature regarding the risks attributed to pregnant women with PCOS. In a meta-analysis, when pregnant women with PCOS were compared with controls, higher cesarean section and labor induction rates were found in the PCOS group (15).

The results of a meta-analysis conducted by Quin et al. did not support the study by Khomami et al. There was no increase in cesarean section and ovulation rates. Additionally, this study could not show an increased rate of preterm birth and small gestational age (SGA) babies in pregnant women with PCOS. In our study, consistent with the meta-analysis of Khomami et al., in the PCOS group increased cesarean section rates were detected. This was statistically significant. In a study, most of the study group was treated in training hospitals. Consistent with the literature, our study group was treated in our tertiary center (16,17).

Moreover, in this study, more labor induction and cesarean section rates were observed. In our study, consistent with the literature, more cesarean section rates were seen in the PCOS group. This may be due to the increase in labor inductions (18). In the literature has been reported increased risk of SGA infant in pregnant women with PCOS. In our study, we evaluated low-risk term pregnancies. We did not detect any significant difference in terms of gestational age between the PCOS and control groups.

Nowadays, due to advanced obstetric care, intrauterine fetal deaths are extremely rare. Five studies have shown increased perinatal mortality in pregnant women with PCOS. But in this study, women with PCOS with higher BMI were included. In our study, BMI values were similar in both groups. No fetal death was observed. The literature has shown that pregnant women with PCOS are twice as likely to give birth to infants with congenital anomalies than those without PCOS (19,20). Because hyperglycemia in early pregnancy is known to be te-

ratogenic for the embryo, pregnant women with PCOS show insulin resistance compared to controls. Therefore, newborns born to pregnant women with PCOS have an increased risk of congenital anomalies. No infants with congenital anomalies were observed in our study. This may be due to the regular follow-up of the antenatal clinics of pregnant women in our study group (21,22,23).

The relationship between birth weight and PCOS in published studies not clear. In a combined meta-analysis of 12 studies infants of women with PCOS had lower newborn birth weight than the control group. However, this was limited clinical significance. In our study, no significant difference was found in terms of birth weight in the control group and the PCOS group (24). The incidence of neonatal intensive care unit (NICU) admission may be increased in women with PCOS. Meta-analysis of five studies showed that babies born to women with PCOS were admitted to the NICU at a significantly higher rate than non-PCOS controls. In our study, consistent with the literature, higher neonatal intensive care unit admission rate in the PCOS group was detected (25). In the study by Yu et al., higher cesarean section rates were observed in pregnant women with PCOS compared to controls. No significant difference was found between the two groups in terms of vacuum or forceps delivery. In our study, consistent with the literature, higher cesarean rates were observed in the PCOS group. There was no assisted vaginal birth in our study group (26).

Our study has some limitations. These are the relatively small number of patients, the single-center design, and the absence of long-term perinatal outcomes.

CONCLUSION

In our study, When the obstetric results of pregnant women with PCOS are examined. It was observed that the rates of cesarean section and admission to the neonatal intensive care unit for follow-up were higher. This situation should be taken into consideration in pregnancy process management in pregnant women with PCOS.

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