



Gebelik Anemisinin Perinatal Sonuçlara Etkisinin Değerlendirilmesi

Evaluation of the Effect of Pregnancy Anemia on Perinatal Results

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ABSTRACT

Aim: The aim of this study was to investigate the effect of pregnancy anemia on perinatal outcomes in pregnant women.

Material and Method: In this retrospective study, the data obtained from 933 patients who were delivered at the Gynecology and Obstetrics Clinic of a Training and Research Hospital between 1 January 2017 and 31 December 2018 were used. The study was conducted with 305 pregnant women with hemoglobin (Hb) values below 11 g/dL (anemic group) and 628 pregnant women with Hb values above 11 g/dL (control group). Age of the patients, pregnancy history, gravida, parity, birth week, newborn weight, infant sex, birth type, maternal hemoglobin, 1st and 5th minute Apgar scores, oligohydramnios, frequency of intrauterine growth restriction (IUGR) and preterm birth, intra uterine stillbirth data were obtained from files. Pregnancy status and perinatal outcomes of pregnant women with anemia and pregnant women with normal hemoglobin levels were compared.

Results: There was no statistically significant difference between the groups in terms of parity, gravida, age, birth week, intrauterine stillbirth fetus birth rate, mean infant birth weight, normal spontaneous vaginal delivery, cesarean delivery, infant gender, 1st and 5th minute Apgar scores ($p>0.05$). Oligohydramnios, intrauterine growth restriction frequency (IUGR) and preterm delivery rate were statistically significant difference between two groups ($p<0.05$). Preterm labor, IUGR and oligohydramnios rates were higher in the anemic group (11.8%, 9.5%, 13.1% respectively) than the control group (3.3%, 2.8%, 5.5% respectively).

Conclusion: Although anemia is a common condition affecting the pregnancy, especially in low socioeconomic countries, it is important to identify and treat pregnancy anemia during antenatal follow-up in order to reduce perinatal complications. Pregnant women with anemia should be given iron supplementation and informed by the relevant health personnel about the nutritional factors affecting anemia.

Key words: anemia; perinatal results; pregnancy

ÖZET

Amaç: Çalışmada anemisi olan gebelerde, gebelik anemisinin perinatal sonuçlara etkisini araştırmak amaçlanmıştır.

Materyal ve Metot: Bu retrospektif çalışmada, 1 Ocak 2017–31 Aralık 2018 tarihleri arasında bir Eğitim ve Araştırma Hastanesi Kadın Hastalıkları ve Doğum Kliniğinde doğumu gerçekleştirilen 933 hastadan elde edilen veriler kullanıldı. Çalışmaya hemoglobin (Hb) değeri 11 g/dL'nin altında 305 gebe kadın (anemik grup) ve Hb değeri 11 g/dL'nin üzerinde 628 gebe (kontrol grup) dâhil edildi. Dosyalardan hastaların yaşları, gebelik öyküleri, gravida, parite, doğum haftası, yenidoğanın kilosu, bebek cinsiyetleri, doğum şekli, annenin hemoglobini, 1. ve 5. dakika Apgar skorları, oligohidroamniyoz, intrauterin gelişme kısıtlılığı sıklığı (IUGR) ve preterm doğum, intra uterin ölü doğum olup olmadığı gibi veriler elde edildi. Anemik olan ve normal hemoglobin seviyelerine sahip gebelerin gebelik seyri ve perinatal sonuçları karşılaştırıldı.

Bulgular: Gruplar arasında parite, gravida, yaş, doğum haftası, intrauterin ölü fetüs doğum oranı, ortalama bebek doğum ağırlığı, normal spontan vajinal doğum, sezaryen doğum, bebek cinsiyetleri, 1. ve 5. dakika Apgar skorları açısından istatistiksel olarak anlamlı bir fark saptanmadı ($p>0,05$). İki grup arasında oligohidroamniyoz, intrauterin gelişme kısıtlılığı sıklığı (IUGR) ve preterm doğum oranı açısından istatistiksel olarak anlamlı fark bulundu ($p<0,05$). Anemik grupta preterm eylem, IUGR, oligohidroamniyoz oranları (sırasıyla %11,8; %9,5; %13,1) kontrol grubu oranlarından (%3,3; %2,8; %5,5) daha yüksek bulunmuştur.

Sonuç: Anemi özellikle düşük sosyoekonomik düzeydeki ülkelerde gebelik sürecini etkileyen yaygın bir durum olmakla beraber gebelik anemisinin antenatal takipler sırasında belirlenmesi ve tedavisi perinatal komplikasyonların azaltılması bakımından önemlidir. Anemisi olan gebelere demir desteği verilmeli ve anemiyi etkileyen beslenmeyle ilişkili faktörler konusunda üzere ilgili sağlık personeli tarafından bilgilendirilmelidir.

Anahtar kelimeler: anemi; gebelik; perinatal sonuçlar

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Introduction

Anemia, which is common all over the world, is a global public health problem that has effects on human health as well as socioeconomic status. Anemia, which can be seen in every age group, is more common especially in pregnancy and children¹⁻². The most common causes of anemia in pregnancy and puerperium are iron deficiency and acute blood loss. The most common cause of iron deficiency is nutritional deficiency. Hemoglobin levels can vary during pregnancy and reach the lowest levels in the second trimester³.

According to the World Health Organization (WHO), pregnancy anemia is Hb <11 g/dL for all trimesters⁴. Pregnant women are very sensitive to iron deficiency because they need iron in order to increase fetal-placental structure, erythrocyte mass and plasma volume⁵⁻⁶. WHO estimates that at least 30–40% of pregnant women have iron deficiency and almost half of them are anemic⁴.

It is stated that iron deficiency anemia is common in pregnant women due to reasons such as failure to meet the increasing iron requirement during pregnancy, numerous deliveries, shorter time between births, blood loss, inability to absorb iron from daily diet due to parasites or digestive system disorders and the presence of factors that make this absorption difficult⁷.

Anemia is common during pregnancy and is an important factor that can lead to maternal-fetal morbidity and mortality⁸. Anemia, which is an important public health problem, is very common in pregnancies and can lead to obstetric conditions such as low birth weight, preterm birth, low Apgar score, intrauterine growth retardation and perinatal death⁹.

The aim of this study was to investigate the effect of pregnancy anemia on perinatal outcomes.

Material and Methods

The study was conducted between January 1, 2017 and December 31, 2018 with 933 patients who gave birth in a Training and Research Hospital Gynecology and Obstetrics Clinic. Permission was obtained from the local ethics committee on 21.02.2019 with the decision number 2019/04. The data obtained from patient files and follow-up cards were evaluated retrospectively. Two groups were formed as anemic and control groups, 305 pregnant women with hemoglobin (Hb) values below 11 g/dL and 628 pregnant women with

Hb values above 11 g/dL were included in the study. Pregnant women who had no follow-up in the second trimester, multiple pregnancy, preeclamptic and diabetic mothers, pregnant women with placental abruption and bleeding placenta previa, and those with fetal anomaly were excluded from the study.

Apgar scores were calculated by the pediatrician at the 1st and 5th minutes of delivery by 0, 1, 2 points for the color of the baby, 0, 1, 2 points for the heartbeat, 0, 1, 2 points for breathing, 0, 1, 2 points for the tone and 0, 1, 2 points for response to the warning.

Intrauterine growth restriction (IUGR) was defined as babies with birth weight below 10th percentile compared to gestational week. Preterm birth was defined as birth that occurred below 37 weeks of gestation. Babies born below 2500 grams were defined as low birth weight¹⁰.

Data were analyzed using the licensed Statistical Package for Social Sciences (SPSS) 20.0. Student t test was used to compare the means between independent groups and chi-square test was used to compare categorical variables. Descriptive statistical methods (number, mean, standard deviation) were used. $p < 0.05$ was accepted as significant.

Results

The mean age of the 628 pregnant women in the control group was 25.9 ± 5.1 , and the mean Hb level was 12.1 ± 0.6 g/dL, the mean gravida was 2 (1–7), parity 3 (1–6) and intrauterine stillbirth rate was 0.4% ($n=3$), 42.5% ($n=260$) of the patients in this group delivered by cesarean section, 58.5% ($n=368$) delivered by vaginal route (Table 1).

The mean age of 305 pregnant women in the anemic group was 26.1 ± 4.8 and the mean Hb level was 9.1 ± 1.4 g/dL. The mean gravida was 2 (1–6), parity 2 (1–7), and intrauterine stillbirth rate was 0.6% ($n=2$). Of these patients, 44.3% ($n=132$) delivered by cesarean section and 56.7% ($n=173$) delivered by vaginal delivery (Table 1).

In our study, obstetric and neonatal outcomes of patients in both groups are shown in Table 2. 46.2% ($n=290$) of the babies are male babies and 53.8% ($n=338$) are female babies. The mean gestational age of the control group at birth was 39.1 ± 1.2 , mean birth weight was 3195.8 ± 412.4 gr, Apgar score in the first minute was 8 (6–9) and Apgar score in the 5th minute 7 (6–10), preterm delivery rate was 3.3% ($n=21$),

intrauterine growth restriction rate was 2.8% (n=18), oligohydramnios was 5.2% (n=33) (Table 2).

The mean gestational week of the anemic group at birth was 38.1 ± 1.1 , and the mean birth weight was 3421.6 ± 325.2 g. The first minute Apgar score was 7 (5–9) and the 5th minute Apgar score was 8 (6–10). In this group, preterm delivery rate was 11.8% (n=36), intrauterine growth restriction rate was 9.5% (n=29), oligohydramnios was 13.1% (n=40). When we look at the infant sex ratio at birth, 52.7% (n=161) male baby and 48.3% (n=144) female baby were born (Table 2).

There was no statistically significant difference between the groups in terms of age, gravida, parity, mode of delivery, intrauterine stillbirth, mean birth week, mean birth weight, infant sex and 1st and 5th minute Apgar scores ($p > 0.05$).

Oligohydramnios, intrauterine growth restriction frequency (IUGR) and preterm delivery rate were statistically significant difference between two groups

($p < 0.05$). Preterm labor, IUGR and oligohydramnios rates were higher in the anemic group (11.8%, 9.5%, 13.1% respectively) than the control group (3.3%, 2.8%, 5.5% respectively).

Discussion

Iron deficiency anemia is a type of anemia that affects 30% of the world's population. It is an important nutritional deficiency that contributes to the mortality and morbidity of pregnant women¹¹.

The prevalence of anemia varies by geographic region. Especially sub-Saharan Africa, South Asia, the Caribbean and Oceania regions have the highest anemia prevalence in all age groups and both genders¹². According to World Health Organization data, the rate of anemia in pregnant women in our country was determined as 40% and it was stated that this rate was serious¹. There are two opinions on the effect of iron deficiency on intrauterine growth. The first is

Table 1. Distribution of investigated specialties by groups

Variables	Anemic	Control	p
Age	26.1±4.8	25.9±5.1	0.264
Gravida (min-max)	2 (1–6)	2 (1–7)	0.106
Parity median (min-max)	3 (1–8)	3 (1–6)	0.118
Hemoglobin (g/dL)	9.1±1.4	12.1±0.6	0.001
Type of birth	n (%)	n (%)	
Vaginal	173 (% 56.7)	368 (% 58.5)	0.341
Cesarean	132 (% 44.3)	260 (% 42.5)	0.645

Table 2. Distribution of neonatal and obstetric results by groups

Neonatal and obstetric results	Anemic	Control	p
Birth weight (gr)	3421.6±325.2	3195.8±412.4	0.785
Pregnancy week at birth	38.17±1.1	39.1±1.2	0.624
1st minute Apgar score median (min-max)	7 (5–9)	8 (6–9)	0.173
5th minute Apgar score median (min-max)	8 (6–10)	7 (6–10)	0.278
	n (%)	n (%)	
Preterm birth	36 (% 11.8)	21 (% 3.3)	0.001
IUGR	29 (% 9.5)	18 (% 2.8)	0.001
Oligohydroamnios	40 (% 13.1)	33 (% 5.5)	0.001
Gender			
Female	144 (% 48.3)	338 (% 53.8)	0.677
Male	161 (% 52.7)	290 (% 46.2)	0.465
Intrauterine stillbirth	2 (% 0.6)	3 (% 0.4)	0.198

IUGR, intrauterine growth restriction.

that reduced iron levels can cause hypoxia. Increased neuradrenaline and corticotropin levels, along with hypoxia, cause fetal and maternal stress and trigger preterm birth. Second opinion suggests that iron deficiency causes oxidative damage to the feto-placental unit and decreases the amount of oxygen to the fetus and causes intrauterine growth retardation and infections¹³. Iron deficiency anemia in pregnancy increases the risk of preterm birth; especially hemoglobin levels below 11 g/dl significantly increase preterm delivery rates¹⁴⁻¹⁶. In one study, it was found that approximately 78% of women had anemia at birth and a significantly higher rate of preterm delivery was found in anemic women¹⁷. The rates of hypertension, diabetes, preterm birth and infants admitted to the intensive care unit were higher in anemic pregnant women¹⁸. In another study with 383 pregnant women, a significant relationship was found between low birth weight and anemia¹⁹. Similarly, in another study, anemic pregnant women were found to be at risk for having preterm deliveries and low birth weight babies²⁰. In our study, a significant difference was found between the two groups in terms of oligohydramnios, frequency of intrauterine growth restriction (IUGR) and preterm delivery rate in accordance with the literature ($p < 0.05$). Preterm labor, IUGR and oligohydramnios rates were higher in the anemic group (11.8%, 9.5%, 13.1% respectively) than the control group (3.3%, 2.8%, 5.5% respectively).

There are many factors that cause low birth weight, such as maternal age, gestational anemia, low gestation period²¹⁻²². Many factors associated with low birth weight (maternity under 20 years of age, less than 24 months of gestation, low body mass index, birth below 37 weeks) were found²³. In another study, anemia was associated with low birth weight²⁴. In our study, no significant difference was found between the two groups in terms of birth weight. This may be because the weight of the newborn depends on many factors.

Studies in both animals and adults support that iron deficiency affects the psychomotor development, behavioral characteristics, and cognitive functions of the baby. However, it has not been determined whether it is particularly important to have sufficient iron at certain stages during brain development and iron supplementation during pregnancy can restore possible damage²⁵. Low Apgar score and cesarean rate are high in the anemic pregnant women, also gestational anemia was

associated with preeclampsia, placenta previa, preterm delivery, and high cesarean delivery rates^{26,27}. Unlike other studies, Karbancioglu et al.²⁸ found no difference between the anemic and non-anemic groups in terms of preterm birth, birth weight, delivery patterns and Apgar scoring. They stated that these results may be related to the low amount of patients in the deep anemia group. In our study, no significant difference was found between maternal hemoglobin level, Apgar score at the first and fifth minutes and delivery type. In one study, no difference was found between the anemic and control groups in terms of Apgar scoring similar to our study²⁹. This result may be due to the fact that the hemoglobin values of both groups were close to each other and the numbers of cases were low.

Mild anemia at any time during birth increases the risk of stillbirth by 1.3 times³⁰. However, in another study, stillbirth and neonatal mortality rates were significantly higher only in severe anemic group³¹. In our study, no significant difference was found between the groups in terms of intrauterine stillbirth. It has been reported that iron supplementation prevents gestational anemia but has no effect on preterm delivery and intrauterine stillbirth³².

As a result, in the literature, there are studies indicating that maternal anemia has negative effects on perinatal outcomes as well as studies indicating that it has no effect. In our study, negative perinatal outcomes such as oligohydramnios, preterm labor and frequency of intrauterine growth restriction were determined in the anemic group. Iron deficiency anemia is a preventable condition. It is important for mothers to detect anemia in the early period and to receive iron supplementation. The findings suggest that larger studies are needed to investigate the effect of pregnancy anemia on perinatal outcomes.

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