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Does subchorionic hematoma have an effect on pregnancy and delivery?

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Abstract

Background/Aim:It was aimed to investigate the prognostic effects of subchorionic hematoma(SCH) detected in the first trimester ultrasonography examination on the course of pregnancy and delivery.

Methods:In Kayseri City Hospital Gynecology Ultrasonography Outpatient Clinic, 3.126 pregnant had been performed obstetric ultrasonography between October 2019 and June 2020 and their results were investigated retrospectively. On obstetric ultrasonography which is applied in first trimester, bleeding areas (superior, inferior, side walls and anterior+posterior) were classified according to their placement around the gestational sac. The SCH's thickness was measured vertical to the uterine wall and it was recorded. Pregnancy process, birth week, method of delivery and birth weight was recorded. Obtained results were classified to bleeding area thickness, localization, whether it covers the internal os or not. The statistical analysis was performed by linear regression analysis and Student-t test according to the conclusion of pregnancy with abortion, early or term delivery and birth weight.

Results:SCH area defined around the gestational sac was detected in 65 pregnant women in the first trimester. According to the data obtained, a statistically significant inverse relationship was found between SCH thickness size and the week of termination of pregnancy($p<0.05$). A statistically inverse relationship was found between birth weights in live births and SCH thickness($p<0,05$). It was concluded that the effect of other findings on live birth, abortion or birth weight was not statistically significant.

Conclusion:The size of SCH that pose a threat of miscarriage in the first trimester affects the birth weight of the fetus and the week at which the pregnancy ends.

Keywords: Subchorionic hematoma, obstetric ultrasonography, first trimester

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Introduction

Evaluation of the gestational sac, yolk salk and embryo during early pregnancy is easily performed by ultrasonography. At the same time, the role of ultrasonography in prediction of gestational age, fetal cardiac activity and assesment of possible concomitant pathologies during this period is indisputable (1). The most common cause of vaginal bleeding between the tenth and twentieth weeks of pregnancy is subchorionic hemorrhage, subchorionic hematoma (SCH), and marginal placental rupture (2). The area of SCH is an ultrasonographic finding that can be detected in pregnant women with or without vaginal bleeding and is monitored as a collection of hemorrhagic fluid in the form of a cresent between the uterine wall and the chorionic membrane (3). The presence of uterine malformation, a history of recurrent pregnancy loss, multiparity or pelvic infections are factors that predispose to subchorionic bleeding (4). The presence and size of the bleeding area is one of the important perinatology issues in pregnancy management. The risk of placental separation in pregnant women with SCH is increased five times or more. Patients with SCH are also at risk for other complications, such as premature birth, premature rupture of membranes, and early or late pregnancy loss (5). SCH diagnosed at the beginning of pregnancy is also a risk factor for pregnancy-related hypertension in the third trimester (4).

In our study, it was aimed to find out the prognostic effects of SCH on the course of pregnancy and delivery in patients with SCH found around the gestational sac in the first trimester ultrasonography.

Materials and methods

In Kayseri City Education and Research Hospital Obstetric Gynecology Ultrasonography Outpatient Clinic, 3.126 pregnant had been performed obstetric ultrasonography between October 2019 and June 2020 and their results were investigated retrospectively after the study was approved by hospital ethics committee (Ethical approval: 18.02.2021/313). All ultrasonographic examinations were performed using a convex and/ or transvaginal probe on the Aplio 500 ultrasonography device (Canon Medical Systems Corporation, Tokyo, Japan) by a single radiologist (ŞT) experienced in obstetric and gynecological ultrasonography. Ultrasonography examination was carried out in accordance with the recommendations in the current guide of the International Obstetric and Gynecological Ultrasound Association (ISUOG) (6) Menstrual cycle was determined according to the last menstrual date in regular pregnant women; in pregnant women whose last menstrual period is unknown, the week was determined according to the crown rump distance. On obstetric ultrasonography which is applied in first trimester, bleeding areas (superior, inferior, side walls and anterior+posterior) were classified according to their placement around the gestational sac. The SCH's thickness was measured vertical to the uterine wall and it was recorded (Picture 1). It was noted whether the bleeding area covered the internal os (Picture 2).

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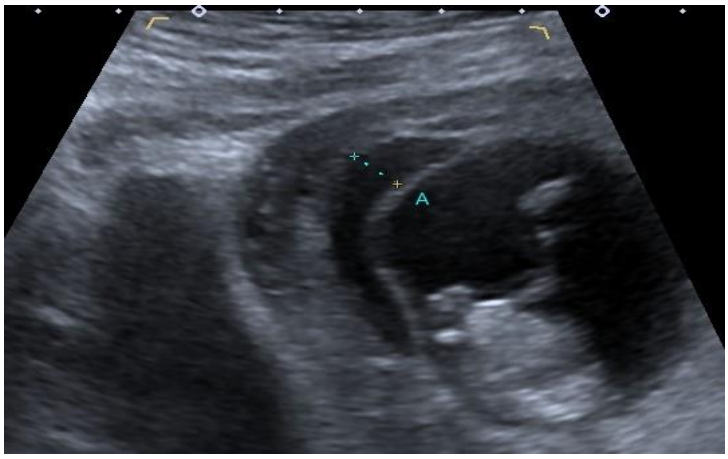
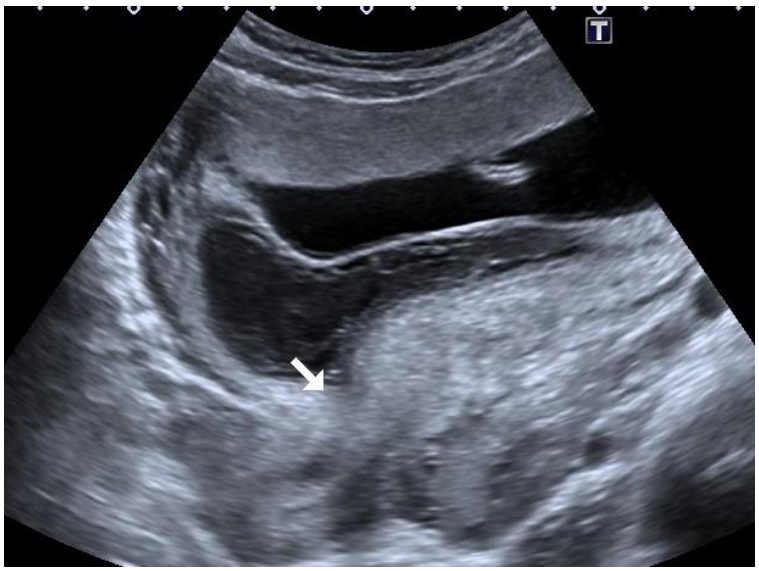
Picture 1: The thickness measurement of the SCH is shown.



Picture 2: The SCH appears to cover the internal os.



Pregnancy process, birth week, method of delivery, birth weight and gender of the baby was recorded. Multiple pregnancies and pregnant women who were previously diagnosed with chronic diseases (diabetes, hypertension, etc.) and received anticoagulant treatment were not included in the study. According to the results obtained; our study were evaluated by linear regression analysis and Student-t test according to abortion, live birth and birth weights of pregnancy.

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Results

In the 65 of the 3.126 pregnant women who underwent first trimester obstetric ultrasonography were found to have an SCH area around the gestational sac between October 2019 and June 2020. Of these, follow-up and postpartum results of 57 pregnant women were reached. The incidence of SCH was 2.07%. The pregnant women were between the ages of 18 and 39 (mean±SD: 27.7±5.1). SCH was detected in ten pregnant women at six to nine weeks of gestation, 47 pregnant women at 10-13 weeks of gestation. Of the total 57 pregnancies, 10 resulted in abortions between 8-22 weeks of gestation. In the study, the incidence of abortion in pregnant women with SCH was 17.5%. Demographics of pregnant women in the study population were summarized in Table 1.

Table 1: Demographics of pregnant women and newborns.

Parameters	**Findings**
Maternal	
Age	18-39 (mean±SD:27,7±5,1)
Pregnancy week	
6-9. pregnancy week	10
10-13. pregnancy week	47
Nulliparite	11 (%19,2)
Method of delivery	
Normal delivery	21 (%36,8)
Cesarean delivery	26 (%45,6)
Abortus	10 (%17,5)
Birth Weight	
SGA (small gestational age)	6 (%12.7)
LGA (large gestational age)	5(%10.6)
Preterm delivey	8 (%17)
Gender of the baby (Live Births)	
Boy	27 (%57,4)
Girl	20(%42,6)

In our study, SCHs were found in anterior/ posterior gestational sac in 17 cases, superior in six cases, inferior in 22 cases and lateral walls in 12 cases. In 43 of these cases, the internal os was closed by the SCH. SCH thicknesses in ten pregnant women who had an abortion were between 11-20 mm in five, 21 mm and above in five. The average SCH thickness was 20.80±10.28 mm in pregnancies resulting in abortion, and the average SCH thickness was 16.09±8.90 mm in pregnancies occurring with live birth. In 30% of the pregnancies that ended with abortion, the detection week of SCH was between six and ninth weeks, while 70% of the pregnancies ended in abortion were between the tenth and thirteenth gestational weeks. In pregnancies resulting in live birth, SCH was detected in 15% of pregnant women at six to nine

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weeks of gestation and in 85% at 10-13 weeks of gestation. The number of live fetuses born preterm was eight and they were born between twenty-nine and thirty-sixth gestational weeks. Live birth occurred in thirty-nine pregnant women at term (between 37-42 weeks of gestation). The number of low-birth-weight fetuses was six, and the number of high-birth-weight fetuses was five.

In the light of these findings, linear regression analysis and Student-t test were used according to the gestational termination weeks and birth weights. There was a statistically inverse relationship between SCH thickness and the week of termination of pregnancy ($p<0.05$); it was observed that the pregnancy duration was longer in pregnant women with less SCH thickness (Figure 1). In addition, a statistically significant inverse relationship was found between birth weight in live births and the SCH thickness ($p<0,05$); as the SCH thickness decreased, birth weight in live births increased (Figure 2). It was observed that SCH thickness had no effect on internal os closure and bleeding area localisation, as well as on live birth, birth weight and abortion ($p>0.05$).

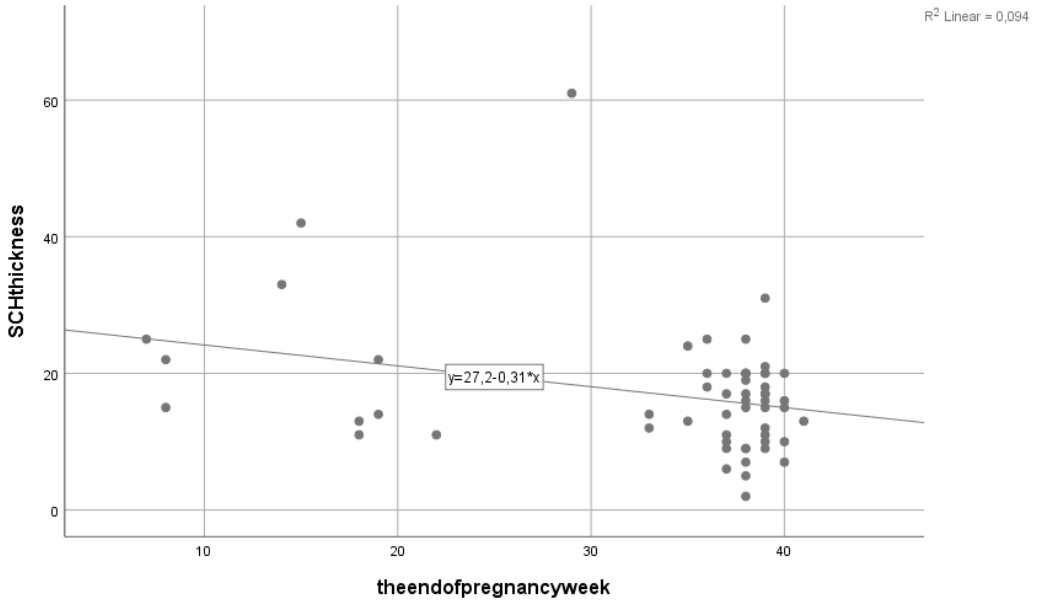

Figure 1: Scatter chart between "SCH thickness - the end of pregnancy week".

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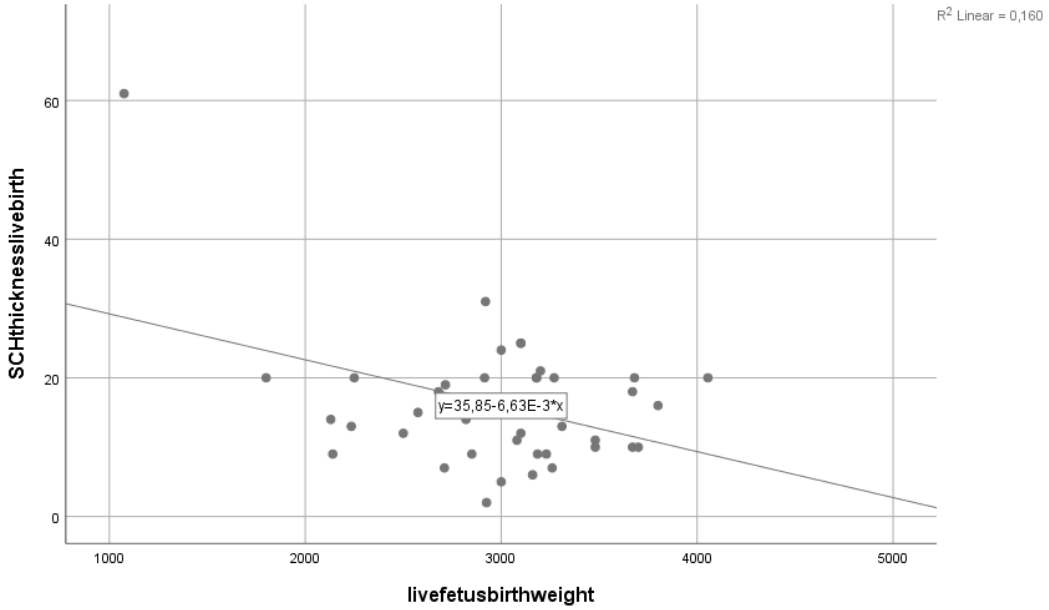

Figure 2: Scatter chart between "SCH thickness in live birth-live fetus birth weight"

Discussion

SCH was detected around the gestational sac in 65 of 3.126 pregnant women who underwent obstetric ultrasonography in the first trimester between October 2019 and June 2020. Of these, follow-up and postpartum results of 57 pregnant women were reached.

In determining whether pregnancy will continue, the presence of accompanying poor prognostic factors in pregnancy follow-up is important. The size of SCH's has been calculated in different ways in various studies and its effect on pregnancy prognosis has been tried to be determined [7]. The size of the bleeding was classified as small, medium and large, or it was attempted to calculate how much the bleeding area surrounded the pregnancy sac (8-10). There are also studies that calculate the volume of bleeding by comparing it with the gestational sac, or studies that calculate and evaluate the volume of direct bleeding (10-13). It has been reported that small bleeding does not increase the risk of miscarriage (14). However, it has also been noted that large SCH can increase the risk of miscarriage by about three times (10). In our study, the localization of SCH around the gestational sac and the thickness measurements were taken from the thickest part surrounding the sac, vertical to the uterine wall. Later, its effect on pregnancy prognosis was examined. Bleeding volume calculation was not performed. It has been determined that the pregnancy will end in earlier weeks as the SCH thickness increases.

In a literature review related to SCH, 14 studies were reviewed (15). It has been found that the incidence of SCH varies greatly between 4-48%. It was concluded that small SCH is more common in the first trimester, but may not have much of a negative effect on pregnancy. On the contrary, it has been noted that second trimester SCH's are usually larger and can have

a negative effect on pregnancy prognosis, increasing the risk of premature birth (15). The incidence of SCH in our study population was 2.07% and was found to be less than the literature review. We attribute this result to the diversity in our patient population. Heller et al. (7) found abortion at eight weeks below in 46 pregnants and between eight and eleven weeks of gestation in six pregnants in their study on 434 pregnant women with bleeding in the first trimester. They published that the total abortion rate was 12%. Our abortion rate in pregnant women with SCH was found to be 17.5%, which was higher than the literature. We attribute the high rate of abortion to the low number of pregnant women with SCH.

The effect of SCH's on preterm birth has also been investigated. In a prospective study conducted by Pedersen JF and Mantoni M (16), they found that abortion and preterm birth rates in pregnant women with and without SCH were equal to each other and concluded that the bleeding area did not have an effect on these factors. In our study, eight fetuses were born between 29 and 36 weeks of pregnancy in a total of 57 pregnant women with SCH and the preterm birth rate was 14%. In our study, we couldn't compare any comparison between abortion and preterm birth rates in pregnant women with and without SCH because there was no control group.

A systematic literature review conducted in 2014 determined the predictive value of intrauterine hematoma symptoms for adverse pregnancy outcomes (17). The position and duration of SCH relative to the placenta or uterus has been shown to have strong predictive value on its prognosis in ongoing pregnancy. Whereas, when the clinical significance of pregnancy in its prognosis is evaluated, it was concluded that forward-looking, large-sample cohort studies that take into account all the detailed symptoms of SCH are needed.

A study by Palatnik A and Grobman AW (18) investigated the effects of SCH, detected in the first trimester, on preterm birth and cervical length in the second trimester. They concluded that the presence of SCH has a negative effect on cervical length and has an effect on preterm birth. In a study conducted by Biesiada L et al.(4), they noted that SCH diagnosed in early pregnancy would not affect adverse pregnancy outcomes and birth patterns, delivery methods, yet it could be a risk factor for pregnancy-related hypertension in the third trimester. Altinboga O et al. (19) compared the birth rate in pregnant women with and without SCH diagnosed with abortion imminens in the first trimester. As a result, they found that the gestational termination week was earlier and the abortion rates were higher in pregnant women with SCH. In our study, we found that thickness of the hematoma in pregnant women with SCH is also effective on termination week of the pregnancy and birth weight.

Since our study is a retrospective study, it has a number of limitations. The SCH was considered only one dimension from the thickest place vertical to the uterine wall, with no bleeding volume or two-dimensional evaluation. Retroplesental extension of bleeding could not be evaluated. There is no control group and also no comparison between abortion, preterm birth and birth weight could be made in pregnant women who did not develop SCH during pregnancy.

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Conclusion

Although SCH should not be seen in the normal course of pregnancy, it is a condition that we encounter quite often in routine obstetric practice. With close follow-up and treatment, it often results in a healthy birth. In this case, what we should do is comfort the mother and perform the necessary procedures.

The mystery of uterine bleeding during pregnancy continues remains, and more wide-ranging prospective studies are needed.

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