

Original Article

The Effects of Subchorionic Hematoma on Pregnancy Outcome in Patients with Threatened Abortion

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Abstract

Objective: To find out the association of Subchorionic Hematoma with pregnancy outcome in patients with threatened abortion.

Methodology: This case control study was carried out at obstetrics and gynecology department of Azad Jammu And Kashmir Medical College, Muzaffarabad from April 2018 to March 2019. All the patients presenting with threatened abortion that is vaginal bleeding in first trimester and fulfilling inclusion and exclusion criteria were included in the study. These patients were divided into two groups of cases with subchorionic hematoma and controls without findings of hematoma. The presence, size and location of subchorionic hematoma was assessed by ultrasound in all women in the study. The presence of crescent shaped, echo free area between the myometrium and chorionic membrane was taken as subchorionic hematoma. All this information along with demographic and clinical examination findings were noted on a predesigned performa.

Results: The mean age of cases was 30.71 ± 5.15 years and controls was 29.44 ± 3.45 years. The mean gestational age at first vaginal bleeding was recorded significantly (p -value < 0.05) higher among cases group (11.76 ± 3.42 vs. 10.52 ± 1.62). A significant (p -value < 0.05) association of subchorionic hematoma with miscarriage was observed indicating a higher rate of miscarriage in cases group (37.9% vs. 19.7%) compared to control group. The pregnancy complications like IUGR, pregnancy induced hypertension (PIH) and preterm labor did not show any association with subchorionic hematoma except preeclampsia rate (15.2% vs. 4.5%). Caesarean section rate was significantly (p -value < 0.05) higher in cases group (43.9% vs. 20.0%). The rate of good APGAR score (> 7) was observed significantly lower in cases group (63.4% vs. 82.2%, p -value < 0.05).

Conclusion: The risk of miscarriage may increase in patients with subchorionic hematoma presenting with threatened abortion. The presence of subchorionic hematoma increase the chances of adverse pregnancy outcome.

Keywords: Subchorionic Hematoma, Miscarriage, Pregnancy outcome, Threatened abortion.

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Introduction

A collection of blood between membranes of placenta and chorion in the subchorial area is termed as subchorionic hematoma leads to subchorionic hemorrhage. This pregnancy related anomaly usually occurs in the early pregnancy

period during first trimester. The patient present with vaginal bleeding and around 18% of all cases presenting with vaginal bleeding in first trimester have subchorionic hematoma and it can only be detected by ultrasound scan. This normal gestational sac near anechoic area shows echo

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free on a sonographic image. This can be of variable size and usually have a half moon shape. The progression of this condition can be observed on scan image for improvement or worsening of the condition. Clinical examination is necessary for the assessment because sonographic results are required to be correlated with clinical symptoms like bleeding and pelvic pain.^{1,2}

Subchorionic hematomas have greater variation in prevalence reported in previous studies. Its incidence varies from 0.46% to a very high value of 39.5% and it is commonly observed on ultrasound.³ The available data have conflicts regarding the clinical consequences of subchorionic hematomas. The most commonly reported adverse outcome is pregnancy loss associated with subchorionic hematoma. The chances of spontaneous abortion increase by twofold in patients having subchorionic hematoma on the basis of a large systematic review.⁴ Results from some studies found no association of subchorionic hematoma and loss of a pregnancy that is patients having subchorionic hematoma have lower risk for pregnancy loss.⁵ In the first trimester of the pregnancy, vaginal bleeding is one of the common complications with an incidence of 16-25%. In early pregnancy period, threatened abortion can be described as intrauterine bleeding with or without the presence of cervical dilation or tenderness. Mostly this bleeding is pain free and have very less chances of worsening but it causes maternal anxiety and adverse fetomaternal outcomes.⁶ Placental dysfunction can be one of the mechanisms for threatened abortion which can lead to several late complications like preeclampsia, intrauterine growth restriction (IUGR), preterm labor, placenta previa, placental abruption and perinatal mortality.⁷

A subchorionic hemorrhage or hematoma is a risk factor for spontaneous abortion, particularly when it amounts to 25 percent or more of the volume of the gestational sac. The risk of preterm labor increases in the presence of vaginal bleeding. The location of subchorionic hematoma has a strong association with pregnancy outcome and

the worst outcome has been observed for retroplacental hematomas in contrast to marginal hematomas. Size of hematoma has also a strong impact on pregnancy outcome but the location of subchorionic hematoma is the most important predictor for pregnancy outcome. The relationship of the size of hematoma and risk of adverse pregnancy outcome has not been well established in previous studies.^{8,9}

Frequency of vaginal bleeding during the first half of pregnancy is quite common and about one fourth of the pregnant women encounter this issue and among women facing this issue almost half ends up in abortion. The main reasons for vaginal bleeding between 10 and 20 weeks of gestation are subchorionic hemorrhage, and rupture of a marginal placental sinus. SCH accounts for about 11% of cases. Its etiology is unknown, although uterine malformations, history of repeated abortions and infection have been suggested as possible predisposing factors.¹⁰

The mechanism behind loss of pregnancy associated with subchorionic hematoma is not much clear, nor this topic has been studied extensively in our population. So, investigation of relationship between subchorionic hematoma in first trimester and pregnancy loss is the main aim of this study.

Methodology

This case control study was conducted in obstetrics and gynecology department of Azad Jammu and Kashmir Medical College, Muzaffarabad in a period of one year from April 2018 to March 2019. All the patients presenting with threatened abortion that is vaginal bleeding in first trimester and fulfilling inclusion and exclusion criteria were included in the study. These pregnant women presenting with vaginal bleeding in first trimester were divided into two groups: first group who was taken as cases group was consisted on pregnant women presented with threatened miscarriage and the ultrasound showing subchorionic hematoma and second group who was taken as controls consisted on pregnant

women who presented without hematoma in first trimester. All these pregnant women were properly assessed and followed up during pregnancy.

A total 132 pregnant women were included in the study consisting on 66 cases of subchorionic hematoma and 66 controls without subchorionic hematoma. The sample size calculation was done with WHO sample size calculator and it was based upon 5%, level of significance, 80% power of test, 20% miscarriage rate among cases and 8% among controls.⁷ Pregnant women having singleton viable intrauterine pregnancy, gestation between 6 and 14 weeks with or without intrauterine hematomas were included in the study. Pregnant women having multifetal pregnancy, fetal abnormality or with history of recurrent miscarriage, medical diseases and with scarred uterus were excluded from the study.

The presence, size and location of subchorionic hematoma was assessed by ultrasound in all women in the study. The presence of crescent shaped, echo free area between the myometrium and chorionic membrane was taken as subchorionic hematoma. All this information along with demographic and clinical examination findings were noted on a predesigned performa. Information regarding history of miscarriage, gestational age at first bleeding, miscarriage, gestational age at miscarriage, and duration between first bleeding and miscarriage were also noted and compared. The patients who successfully completed their pregnancy their gestational age at labor and other pregnancy related complication like preeclampsia, IUGR, preterm delivery and mode of delivery was recorded. Fetal outcome was also noted on the basis of birth weight, APGAR score at 1 and 5 minutes and need for admission in NICU.

All the collected data was entered and analyzed with SPSS v. 21. Descriptive statistics were used to calculate mean and standard deviation for quantitative variables, and frequencies with percentages for qualitative variables. Independent sample t-test was used to compare quantitative variables and chi-square test for qualitative

variables, between study and control group. P-value < 0.05 was considered significant.

Results

A total of 132 participants were enrolled consisting on 66 cases of subchorionic hematoma and 66 controls without subchorionic hematoma. The mean age of cases was 30.71 ± 5.15 years and controls was 29.44 ± 3.45 years. Mean parity of 1.74 ± 1.49 was noted in cases group and 2.89 ± 1.729 in control group. The mean gestational age of 28.38 ± 10.89 weeks in cases group and 29.48 ± 11.27 weeks in controls group was recorded. The mean gestational age at first vaginal bleeding was recorded significantly (p-value < 0.05) higher among cases group (11.76 ± 3.42) as compared to (10.52 ± 1.62) control group. There was no significant difference (p-value > 0.05) in booking status and history of miscarriage between both groups. In this study a significant (p-value < 0.05) association of subchorionic hematoma with miscarriage was observed indicating a higher rate of miscarriage in cases group (37.9% vs. 19.7%) as compared to control group.

The pregnancy complications like IUGR, pregnancy induced hypertension (PIH) and preterm labor did not show any association with subchorionic hematoma except preeclampsia rate which was noted significantly (p-value < 0.05) higher in control groups (15.2% vs. 4.5%) as compared to case group. Similarly, higher mean gestational age at delivery was observed in control group (36.02 ± 2.68 vs. 36.89 ± 0.57) as compared to cases group. Caesarean section rate was noted significantly (p-value < 0.05) higher in cases group (43.9% vs. 20.0%) as compared to control group, as elaborated in table I.

There was no significant (p-value > 0.05) difference in mean birth weight and rate of low birth weight between cases and control groups. A significant (P-value < 0.05) relationship was found between subchorionic hematoma and APGAR score at one minute. The rate of good APGAR score (> 7) was observed significantly lower in cases group (63.4% vs. 82.2%, p-value < 0.05) as

compare to control group. No significant (p-value > 0.05) difference was found in rate of good APGAR score at 5 minute and rate of NICU admission between both cases and controls groups as elaborated in table II.

Discussion

Bleeding per vaginum with or without uterine contractions in the first trimester is a commonly encountered pregnancy complication considered as symptom of threatened miscarriage and up to

25% of the pregnant women experience this condition. In these women a most common abnormality found on ultrasound is subchorionic hematoma. Which is a gathering of blood between chorionic membrane and uterine wall. Usually it appears in crescent shaped lesion around the gestational sac.¹¹ In a cohort study from Turkey, Sukur YE, et al found incidence of subchorionic hematoma to be 18.2% among the women presented with threatened abortion. Its incidence varies between 1.7% to 3.1% in general

Table I: Demographic characteristics and maternal complications of both groups.

| Characteristics | | Cases (n=66) | | Controls (n=66) | | P-value |
|---|-------------------|-------------------|------------|-------------------|------------|---------|
| | | Frequency | Percentage | frequency | Percentage | |
| Age (Mean \pm SD) | | 30.71 \pm 5.15 | | 29.44 \pm 3.48 | | 0.098 |
| Parity (Mean \pm SD) | | 1.74 \pm 1.49 | | 2.89 \pm 1.73 | | 0.000 |
| Gestational age (Mean \pm SD) | | 28.38 \pm 10.89 | | 29.48 \pm 11.27 | | 0.567 |
| Gest. Age at First Vaginal bleeding (Mean \pm SD) | | 11.76 \pm 3.42 | | 10.52 \pm 1.62 | | 0.009 |
| Booking Status | Booked | 42 | 63.6 | 39 | 59.1 | 0.592 |
| | Non-booked | 24 | 36.4 | 27 | 40.9 | |
| H/O Miscarriage | Yes | 26 | 39.4 | 19 | 28.8 | 0.199 |
| | No | 40 | 60.6 | 47 | 71.2 | |
| Miscarriage | Yes | 25 | 37.9 | 13 | 19.7 | 0.021 |
| | No | 41 | 62.1 | 53 | 80.3 | |
| Pregnancy Complications | Preeclampsia | 3 | 4.5 | 10 | 15.2 | 0.041 |
| | IUGR | 8 | 12.1 | 9 | 13.6 | 0.795 |
| | PIH | 5 | 7.6 | 5 | 7.6 | 1.000 |
| | Preterm | 10 | 24.4 | 5 | 11.1 | 0.105 |
| Gest. Age at delivery (Mean \pm SD) | | 36.02 \pm 2.68 | | 36.89 \pm 0.57 | | 0.037 |
| Mode delivery | SVD | 23 | 56.1 | 36 | 80.0 | 0.017 |
| | Caesarean section | 18 | 43.9 | 9 | 20.0 | |

Table II: Comparison of Fetal outcome between cases and controls.

| Characteristics | | Cases (n=66) | | Controls (n=66) | | P-value |
|--------------------------|------------------------|--------------|------------|-----------------|------------|---------|
| | | Frequency | Percentage | Frequency | Percentage | |
| Birth weight (Mean + SD) | | 2.52 + 0.198 | | 2.58 + 0.190 | | 0.126 |
| Birth weight | Low birth weight | 12 | 29.3 | 8 | 17.8 | 0.208 |
| | Normal weight | 29 | 70.7 | 37 | 82.2 | |
| APGAR score at 1 minute | Poor APGAR score (< 7) | 15 | 36.6 | 8 | 17.8 | 0.049 |
| | Good APGAR score (>7) | 26 | 63.4 | 37 | 82.2 | |
| APGAR score at 5 minutes | Poor APGAR score (< 7) | 6 | 14.6 | 4 | 8.9 | 0.406 |
| | Good APGAR score (>7) | 35 | 85.4 | 41 | 91.1 | |
| NICU Admission | Yes | 16 | 39.0 | 13 | 28.9 | 0.321 |
| | No | 25 | 61.0 | 32 | 71.1 | |

population.¹²

Since there are varied methods of measurement of hematoma size its difficult to counsel the patients regarding the prognosis of pregnancy.¹³ In a systematic review it was observed that the majority of the studies included patients who presented with vaginal bleeding and there is close relationship between vaginal bleeding and intrauterine hemorrhage, therefore it can be concluded that subchorionic hematomas along with vaginal bleeding have influence on pregnancy outcome. The risk of embryonic death has a significant association with clinical bleeding along with subchorionic fluid or subchorionic bleeding which individually have no effect on increasing the risk of embryonic death.¹⁴

According to the results of this present study the mean age of cases was 30.71 ± 5.15 years and controls was 29.44 ± 3.45 years. Mean parity of 1.74 ± 1.49 was noted in cases group and 2.89 ± 1.729 in control group. There was no statistically significant ($p\text{-value} > 0.05$) difference in mean gestational age of cases group (28.38 ± 10.89 vs. 29.48 ± 11.27 weeks) as compared to controls group. Our results are in very much agreement with other studies like studies done by Hashem et al¹⁵ and Yavuz et al.¹⁶, who have reported that there was no statistical significance between hematoma group and control group regarding gestational age at birth.

Several studies have observed that diagnosis of subchorionic hematoma in earlier gestational age is a risk factor for poor pregnancy outcome. The risk of pregnancy loss and adverse outcome increase significantly if the subchorionic hematoma diagnoses before 9th week of gestation as compared to diagnosis after 9 weeks with an odds ratio of 18.29. The chances of pregnancy loss increase from 2% to 20% with diagnosis before 9 weeks.¹⁷ But there is bit disagreement with our results on this finding because in our study we found that the mean gestational age at first vaginal bleeding was significantly ($p\text{-value} < 0.05$) higher among the cases group (11.76 ± 3.42) as compared to (10.52 ± 1.62) control group.

Results from the present study revealed that threatened abortion (vaginal bleeding) in the presence of subchorionic hematoma is an important factor for the continuation of pregnancy. The risk of miscarriage increases significantly in these patients of subchorionic hematoma presented with threatened abortion. In this study a significant association of subchorionic hematoma with miscarriage was observed indicating a higher rate of miscarriage in cases group (37.9% vs. 19.7%) as compared to the control group. Some authors have reported a significant association with spontaneous abortions and other pregnancy complications such as preeclampsia, placental abnormalities and preterm delivery.¹⁸ But in this present study, only preeclampsia along with spontaneous abortion were found to have a significant association with subchorionic hematoma.

The results from this study also revealed that a significant ($P\text{-value} < 0.05$) relationship exists between subchorionic hematoma and APGAR score at one minute. The rate of good APGAR score (> 7) was observed significantly lower in cases group (63.4% vs. 82.2%, $p\text{-value} < 0.05$) as compare to control group. Similar results have been found by other studies like in a study by Biesiada et al, found that rate APGAR score at 1 and 5 minutes showed a significant association with intrauterine hematoma with higher frequency of low APGAR score at in cases group. The reason might be IUGR, placental abruption and higher rate of preterm deliveries.¹⁹

The mechanism of subchorionic hematoma and pregnancy outcomes is not very much clear. Premature perfusion of intervillous space which occurs with subchorionic hematoma is one the possible mechanism. Secondary mechanical effects of the hematoma might be the other possible mechanism. The presence of hematoma might create a weak area which can further progress to more separation of the placenta from the uterine wall, especially when hematoma occurs in retroplacental location and this can result in placental abruption.²⁰ The results of our

study also support these mechanical effects of subchorionic hematoma which can cause miscarriage. This miscarriage may result from presence of subchorionic hematoma and detachment of the gestational sac from endometrium.

Conclusion

The risk of miscarriage may increase in patients with subchorionic hematoma presenting with threatened abortion. The presence of subchorionic hematoma increase the chances of adverse pregnancy outcome in terms of preterm delivery, rate of cesarean section, low birth weight and poor APGAR score at 1 minute. The factors like proper diagnosis, bed rest, regular antenatal checkups and use of progesterone can help in avoiding these pregnancy related complications and continuation of pregnancy with good fetal outcome.

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