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PROSPECTIVE EVALUATION OF RETROPLACENTAL HEMATOMA IN FIRST TRIMESTER HEMORRHAGE

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Abstract

Background: The aim is to evaluate the retroplacental Hematoma in first trimester hemorrhage. **Materials and Methods:** First group included 100 pregnant women, and second group as controls included 400 pregnant women. The size of the gestational sac was recorded, and position of hematoma described in regard to placental site as being subchorionic (located between the chorion and the uterine wall, external to the chorionic leave), retroplacental (behind the placenta, external to the chorion frondosum), or both. **Results:** Comparison between hematoma and control groups regarding pregnancy complications, and hematoma was significantly associated with frequent miscarriage (RR = 1.86, P = 0.003), preterm labor (RR = 1.79, P = 0.005), IUGR (RR = 3.20, P \ 0.001), and abruption (RR = 2.62, P = 0.001). On the other hand, no significant association has been found between hematoma and pregnancy-induced hypertension (P = 0.79) or preeclampsia (P = 0.43). On the other hand, neonates in hematoma group were about 1.68 times more likely to need admission to NICU than those in control group (RR = 1.68, P = 0.015). In contrast, the uneventful pregnancy was more frequent in subchroionic group (66%) compared to those with retroplacental hematomas (38%) (p<0.001). **Conclusion:** The presence and the characteristic of an intrauterine hematoma during the first trimester may identify a population of patients at increased risk of adverse pregnancy outcome.

Keywords: Retroplacental Hematoma, Subchorionic Hematoma, Pregnancy.

Introduction

Intrauterine hematomas are commonly observed features on ultrasound examination, especially among patients with clinically evident bleeding in early pregnancy. The incidence of first-trimester hematomas diagnosed by ultrasound has been reported to be 4 –22%, depending on the patient population studied.[1] Since the initial description of this finding by

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Mantoni and Pedersen in 1981,[2] the resolution of ultrasound equipment has improved dramatically. The diagnosis of intrauterine hematomas is becoming more common as indications for first-trimester ultra- sonography, such as nuchal translucency measurement, increase. The clinical significance of intrauterine hematomas remains controversial. Three prior controlled studies have found an association between the presence of intrauterine hematomas and preterm delivery as well as spontaneous abortion, but two of those studies involved a high-risk population.[3,4] This study aims to investigate the relationship between the presence of an intrauterine hematoma and perinatal outcome in a general obstetric population. We hypothesize that the presence of a first-trimester hematoma might serve as an early marker for adverse perinatal outcome.

Material and Methods

An observational prospective case–control study was conducted in the department of Obstetrics & Gynaecology, Radiodiagnosis at Aaruppadaiveedu medical college and hospital, Puducherry, India. Pregnant women who presented to the gynecologic consultancy clinic in first trimester were divided into two groups: first group: pregnant women presented with threatened miscarriage and the ultrasound showing subchorionic or retroplacental hematoma and second group: pregnant women who presented without hematoma in first trimester. All pregnant women were properly assessed and followed up during pregnancy.

Inclusion criteria

The presence of singleton viable intrauterine pregnancy, gestation between 6 and 14 weeks with or without intrauterine hematomas.

Exclusion criteria

Patients with a nonviable fetus, multifetal pregnancy, fetal abnormality, patients who underwent elective termination of pregnancy, or with history of recurrent miscarriage, medical diseases and with scarred uterus.

Methodology

First group included 100 pregnant women, and second group as controls included 400 pregnant women. Ultrasonography was performed transabdominally using MIND RAY DC80. The size of the gestational sac was recorded, and position of hematoma described in regard to placental site as being subchorionic, retroplacental or both. The sonographic evaluation also included the size of the hematomas relative to the gestational sac size and was characterized as small (less than 20%), medium (20–50%), or large (more than 50%). All patients were followed and reassessed accordingly, patients with hematoma were assessed every 7–14 days until it disappeared; then, by monthly visit. At each visit, full history, examination, investigations and ultrasound were done. Women in both groups were followed throughout their pregnancy course to obtain maternal and neonatal outcome, where we recorded whether their pregnancy ended with miscarriage or continued, and maternal and fetal outcomes were assessed. Gestational hypertension, preeclampsia, abruption, preterm labor, intrauterine growth retardation, and mode of delivery were compared in both groups in regard to maternal outcome, while neonatal outcome which included gestational age at

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delivery, birth weight, Apgar scores (low when it is below 7 at one and 5 min), meconium-stained liquor, and neonatal intensive care unit (NICU) admission.

Statistical analysis

Data were entered and analyzed by using the statistical package for social sciences (SPSS) version 25.0.

Results

Table 1: Relationship between hematoma and pregnancy complications

	Hematoma	**Control**	**RR**	**P**
Miscarriage	21 (21.0)	36 (9.0)	1.86 (1.32–2.61)	0.003
Preterm labor	17 (17.0)	34 (8.5)	1.79 (1.32–2.61)	0.005
IUGR	5 (5.0)	0 (0.0)	3.20 (2.71–3.78)	\ 0.001
Abruption	8 (8.0)	10 (2.5)	2.62 (1.90–3.63)	0.001
PIH	5 (5.0)	31 (7.75)	1.31 (0.77–2.26)	0.42
Preeclampsia	3 (3.0)	25 (6.25)	0.78 (0.25–2.54)	0.69
Uneventful pregnancy	41 (41.0)	256 (64.0)	0.49 (0.37–0.65)	\ 0.001

[Table 2] reveals that the mean gestational age at birth and fetal birth weight were significantly lower in hematoma group than in control group. Apgar score of < 7 was more frequently reported among neonates in hematoma group with relative risk of more than twofold. On the other hand, neonates in hematoma group were about 1.68 times more likely to need admission to NICU than those in control group (RR = 1.68, P = 0.015).

Table 2: Fetal outcome

Fetal variables	**Hematoma (N = 100)**	**Control (N = 400)**	**RR (95% CI)**	**P**
Gestational age at birth (week)				
Mean (SD)	39.1 (1.9)	39.8 (1.8)	–	0.003
Birth weight (kg)				
Mean (SD)	4.0 (0.6)	4.2 (0.7)	–	0.002
Male n (%)	52 (52%)	206 (51.5)	0.97 (0.71–1.7)	1.0
Female n (%)	48 (48%)	194 (48.5)		
Meconium-stained liquor n (%)	7 (7%)	58 (14.5)	0.52 (0.20–1.18)	0.8
Apgar score at 1 min n (%) < 7	50 (50.0)	44 (11)	2.16 (1.54–3.04)	< 0.001
>/= 7	50 (50.0)	356 (89)		
Apgar score at 5 min n (%) < 7	23 (23)	24 (6)	2.16 (1.48–3.09)	0.002

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>/= 7	77 (77)	376 (94)		
Admission to NICU n (%)	31 (31)	72 (18)	1.68 (1.17–2.43)	0.012

Further analysis was carried out within hematoma group for the relationship between pregnancy complications and position of hematoma, as shown in [Table 3]. Miscarriage was significantly associated with retroplacental hematoma 14/50 (28%) pregnant ladies than with subchorionic only 2/50 (4%) pregnant ladies (P = 0.003). Preterm labor, IUGR, PIH, preeclampsia, and abruption were more frequent in women with retroplacental hematoma; however, the differences were not statistically significant (P<0.05). Moreover, the uneventful pregnancy was more frequent in subchroionic group (66%) compared to those with retroplacental hematomas (38%) (P < 0.001).

Table 3: Relationship between position of hematoma and pregnancy complication

Variables	**Position of hematoma**		**RR (95% CI)**	**P**
	Retroplacental	**Subchorionic**		
Miscarriage	14 (28)	2 (4)	1.59 (1.31–.24)	0.003
Preterm labor	12 (24)	3 (6)	1.02 (0.69–1.70)	0.12
IUGR	7 (14)	3 (6)	1.34 (0.67–1.92)	0.58
PIH	3 (6)	2 (4)	0.89 (0.50–1.57)	0.79
Preeclampsia	2 (4)	0	-	0.43
Abruption	8 (16)	1 (2)	0.62 (0.50–1.87)	0.19
Uneventful pregnancy	19 (38)	33 (66)	3.7	< 0.001

Miscarriage was more likely to occur with large hematomas than medium- or small-sized hemato- mas, where 57.69% of women with large hematoma aborted compared to 5.56% of those with medium and only 2.63% of those with small hematomas (P \ 0.001) as shown in [Table 4].

Table 4: Relationship between size of hematoma and pregnancy complications

Outcome	**Size of hematoma**			**P**
	Small	Medium	Large	
Miscarriage	2 (5.26)	2(2.56)	15(57.69)	< 0.001
Preterm labor	4(10.53)	10(27.78)	3(11.54)	0.35
IUGR	4(10.53)	2(5.56)	0	0.26
PIH	2(5.26)	2(5.56)	2(7.69)	0.87
Preeclampsia	1(2.63)	0	1(3.85)	0.30
Abruption	2(5.26)	2(5.56)	2(7.69)	0.52
Uneventful pregnancy	23(60.53)	18(50)	3(11.54)	< 0.001

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postulated that both the presence and location of a hematoma which represented the impaired placentation, rather than its size, were important for pregnancy outcome. By comparing fetal outcome across the position of hematoma, all fetal parameters except the Apgar score showed insignificant association with the position of hematoma (P [0.05). Retroplacental hematoma was significantly associated with lower Apgar score (< 7) at 1 min (RR = 1.70 P = 0.018) and at 5 min (RR = 1.57, P = 0.027) as shown in [Table 5].

Table 5: Relationship between position of hematoma and fetal outcome

Position of hematoma	**Retroplacental (n =50)**	**Subchorionic (n =50)**	**RR (95% CI)**	**P**
Gestational age at birth (week) (mean (SD))	39.9 (1.73)	39.8 (1.54)	-	0.83
Birth weight (kg) (mean (SD))	3.9 (0.6)	4.1 (0.7)	–	0.51
Mode of delivery	3.9 (0.6)	4.1 (0.7)	–	0.51
NVD	24 (48)	22 (44)	0.95 (0.63–1.46)	0.79
Cesarean section	26 (52)	28 (56)		
Sex of the newborn				
Male	16 (32)	24 (48)	0.85 (0.57–1.28)	0.35
Female	25 (50)	14 (28)		
Meconium-stained liquor	2 (4)	4 (8)	0.620 (0.23–1.97)	0.39
Admission to NICU	7(14)	8 (16)	1.38 (0.93–2.06)	0.20
Apgar score at 1 min				
< 7	25(50.0)	10 (20)	1.70 (1.19–2.51)	0.018
>/= 7	25(50.0)	40 (80)		
Apgar score at 5 min				
< 7	20(40.0)	6 (12)	1.57 (1.13–2.31)	0.027
>/= 7	30(60.0)	44 (88)		

Discussion

Mean gestational age at first visit was 11.2 for hematoma group and 10.9 for control group. Parity did not affect the outcome, and this agrees with study done by Yavuz et al.[6] Regarding position and fate of hematoma, retroplacental hematoma was detected in 60 women (60%) at the first visit, while the remaining 40 women (40%) had subchorionic hematoma. At the third visit (after 50 days), hematoma was resolved in all cases except in two patients with retroplacental hematoma, and they continued to have it until the end of second trimester; these two cases were complicated with preterm delivery.

Xiang et al,[7] reported that the incidence of persistent subchorionic hematomas until delivery was 0.46%, which was much lower than that of a hematoma detected in the first trimester (4–48%); almost half of the women with an intrauterine hematoma did not experience vaginal bleeding. This suggests that persistent hematoma until delivery could be a severe type.

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Regarding the size of detected hematomas in relation to the gestational sac size, 23 (23%) pregnant ladies had large hematoma (greater than 50% of gestational sac size).

Soldo et al,[8] reported that intrauterine hematomas are associated with higher miscarriage rate, but the size of hematoma had no effect. Ozkaya et al,[9] reported that the presence of intrauterine hematoma is associated with increased risk of miscarriage and intrauterine growth restriction. Norman et al,[10] reported that the presence of intrauterine hematoma is associated with increased risk of preterm labor and abruption than control group, and this agrees with the current study, while Ozkaya et al,[9] Palatnik,[7] and Grobman,[11] reported that intrauterine hematoma is not associated with increased risk of preterm labor. Tuuli et al,[12] showed that the presence of intrauterine hematoma did not significantly increase the incidence of pregnancy-induced hypertension; this agrees with our results.

It has been significantly found that hematoma was associated with higher rate of cesarean sections; women with intrauterine hematomas were 2.7-fold more likely to be delivered by cesarean section than control group (RR = 2.71, P \ 0.001). Yavuz et al.6 reported that intrauterine hematoma was not associated with increased rate of cesarean section. The same was reported by Zhonghua et al,[13]

Our result agrees with study done by Donogol et al,[14] while Yavuz et al.6 reported that there was no statistical significance between hematoma group and control group regarding gestational age at birth and birth weight. Donogol et al,[14] showed that there was no relation between the presence of intrauterine hematoma and sex of baby, and this agrees with our results. Biesiada et al,[15] reported that low Apgar score at 1 and 5 min was more frequent in patients with intrauterine hematoma; this might be due to increased rate of preterm delivery, fetal growth restriction, and placental abruption, and this is similar to our results. With regard to the position of hematoma, Nagy et al,[17] reported that retroplacental hematomas significantly correlated with an increased risk of adverse maternal and neonatal complications. This agrees with the current study. Preterm labor, intrauterine growth restriction, pregnancy-induced hypertension, preeclampsia, and abruption were more frequent in women with retroplacental hematoma; however, the differences did not reach the statistical significance (in all comparison P [0.05).

This was supported by Ozkaya et al,[9] and Leite et al.[18] Nagy et al,[17] reported the size ratio of hematoma to gestational sac was significantly greater in abortion group (P<0.001); perhaps, it was the presence or absence of a hematoma, not its size, which could be used as a marker of the integrity of placentation, while Maso et al.[19]

Conclusion

Miscarriage rate with retroplacental hematoma is significantly higher than subchorionic hematoma. The size of the hematoma is significantly greater in the miscarriage group.

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