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Original Research Article

Association of volume of first trimester subchorionic hemorrhage with pregnancy outcome

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ABSTRACT

Background: Vaginal bleeding during the first trimester of pregnancy may or may not be associated with subchorionic hemorrhage (SCH). The volume of SCH may affect foetal growth or development. The aim of the study was to determine the impact of first trimester pregnancy SCH on pregnancy outcome.
Methods: 151 women each in two groups (with and without SCH), all with first trimester bleeding were enrolled, monitored throughout pregnancy and outcome noted.
Results: 72.8% women with SCH and 78.1% women without SCH gave birth to a live neonate. The relative risk of pregnancy wastage (spontaneous abortion, antepartum or intrapartum stillbirth) for the women with SCH was 1.22 (95% CI 0.81-1.82; p value =0.33) as compared to those with no SCH. 97% of women with SCH>10 ml had pregnancy wastage (mostly aborted before 20 weeks), 40% of women with SCH>5-10 ml had pregnancy wastage (p<0.001).
Conclusions: The mere presence of SCH did not increase the risk of adverse pregnancy outcomes. However, a large volume of SCH significantly increased the risk of pregnancy wastage in comparison to a smaller SCH.

Keywords: Stillbirth, Subchorionic hemorrhage, Threatened abortion, Wastage

INTRODUCTION

The first trimester of pregnancy is a crucial period in the development of a growing fetus.[1] Early identification of any concerns allows for timely interventions and appropriate management, optimizing the chances of a healthy pregnancy.

Experiencing vaginal bleeding during the first trimester of pregnancy can be distressing. Often it is minimal and resolves on its own without affecting the pregnancy, but sometimes abortion may occur.

Subchorionic hemorrhage, blood clot or collection of blood between the uterine lining and the gestational sac, is a relatively common condition during early pregnancy and can cause varying degrees of concern for expectant mothers.[2] It may result from the separation of the chorion.[3] Majority of cases resolve spontaneously without causing harm to the pregnancy. However, in some instances, subchorionic haemorrhage may increase the risk of complications such as miscarriage, preterm labour, or placental abruption.[4] Regular antenatal care and proper medical management are essential to monitor the condition and ensure the well-being of both the mother and the foetus.[5] The present study was designed to study the association of volume of first trimester subchorionic haemorrhage and pregnancy outcome.

METHODS

This was a single-centre, hospital based, observational study conducted from July 2021 to June 2022 at the department of obstetrics and gynecology of SMS Medical

College, Jaipur, Rajasthan. Approval from the institute's ethical committee was taken. The minimum required sample size was calculated at 95% confidence level assuming 73.33% sensitivity, sample size of 151 cases in each group was taken as found in article of Agarwal et al.[6]

Inclusion and exclusion criteria

Women with gestational age <13 weeks having vaginal bleeding with single viable intrauterine pregnancy (diagnosed by USG) were included in the study. Women with all non-obstetrics causes of vaginal bleeding-trauma, etc. or women with chronic medical diseases uterine structural anomalies, cervical polyp or fibroids were excluded.

Written informed consent was taken from all. Clinical examination, ultra-sonographic findings were recorded on a performa. All women were examined at every antenatal visit and followed till the end of pregnancy and outcome noted. A p value <0.05 was considered statistically significant.

RESULTS

Outcome of 302 participants was observed. The mean age (23 years) in the two groups was similar. 52.3% and 70.2% of women with and without SCH were from rural area. Most women had only primary level education and majority belonged to a middle socioeconomic class respectively. The mean gestational age of the participants with SCH was lower than those without SCH (8.6 and 9.3 weeks respectively). Most were primigravida (Table 1).

Table 1: Demographic profile of the women.

Variable		SCH n=151 (%)	Non-SCH n=151 (%)
Age in years	Mean	23.01±2.62	23.13±2.29
Residence	Urban	79 (52.3%)	106 (70.2)
Literacy level	Up to 5th	91 (60.3)	100 (66.2)
Socio-economic status	Middle	121 (80.1)	109 (72.2)

Table 2: Association of pregnancy outcome with volume of SCH.

Volume in ml	Pregnancy wastage n=41 (%)	Live birth n=110 (%)	P value
<5	5 (4.6)	103 (95.4)	<0.001
5-10	4 (40.0)	6 (60.0)	
>10	32 (97.0)	1 (3.0)	

Correlating the volume of subchorionic hemorrhage with the pregnancy outcome it was observed that 97% of women with SCH >10 ml had pregnancy wastage (most aborted before 20 weeks) whereas only 4.6% of women with SCH volume <5 ml had pregnancy loss (p<0.001). There were 36 abortions, three antepartum and two intrapartum stillbirths. The relative risk of women with SCH>10 ml in comparison to women with SCH<10 ml having a pregnancy wastage was 12.7 (95% CI 6.76-23.89; p value <0.0001). The relative risk of women with SCH>5 ml in comparison to women with SCH<5 ml having a pregnancy wastage was 18.1 (95% CI 7.6-42.99; p value <0.0001) (Table 2).

Table 3: Association of foetal growth with volume of SCH.

Volume in ml	Growth restriction n=6 (%)	Normal growth n=109 (%)	P value
<5	1 (16.7)	102 (93.5)	<0.013
5-10	4 (66.7)	6 (5.6)	
>10	1(16.7)	1 (0.9)	

Among women with restricted growth, 83.4% had >5 ml of SCH while among women with no restricted growth, only 6.5% had >5 ml of SCH. Association of increase volume of SCH with growth retardation among women with SCH was found to be statistically significant (p value <0.013) (Table 3).

Table 4: Association of APH with volume of SCH.

Volume in ml	APH n=10 (%)	No APH n=105 (%)	P value
<5	1 (40)	99 (94.2)	<0.027
5-10	4 (40)	6 (5.8)	
>10	1(20)	-	

Among ten women who had APH, 60% had >5 ml volume of SCH, while among without APH, 94.2% women had <5 ml volume of SCH. Association of increase in volume of SCH with APH among women with SCH was found to be statistically significant (p value <0.027) (Table 4).

DISCUSSION

The present study was conducted to evaluate the impact of volume of subchorionic hemarrhage on the pregnancy outcome. It was observed that the relative risk of pregnancy wastage (spontaneous abortion and stillbirth) for the women with SCH and without SCH was 1.22 (95% CI 0.81-1.82; p value =0.33). However, the stratified relative risk by the volume of SCH revealed that volume greater than 5 ml and 10 ml increased the risk of pregnancy wastage by 18 and 12 times, respectively. Hence the favourable outcome was dependent on the existence of SCH.

Similar to our findings, Benett et al, Ball et al, reported that when SCH sizes increased, pregnancy loss rates increased.[7,8] Similarly, Nagy et al discovered higher rates of miscarriage and intrauterine growth restriction in SCH patients.[9] They also demonstrated a link between the size

of the SCH and continued pregnancy outcome metrics.

The present study results correlated with studies conducted by Kamble et al, Ara et al who found that women if presented with only spotting had more favourable outcome than who presented with excess bleeding.[10,11]

In another case-control study, Johns et al reported that first-trimester vaginal bleedings were associated with adverse pregnancy outcomes, but the presence of SCH had no effect on the prognosis.[12] Some studies (Pedersen and Mantoni, Maso et al) failed to demonstrate this association.[13,14]

Signore et al, observed poor pregnancy outcome when USG abnormalities was detected with vaginal bleeding. Over the last few years, the quality and availability of USG has progressively improved. However, if bleeding is large, it may significantly decrease the nourishment and oxygenation of fetus, growth retardation and foetal death may occur. The underlying mechanism of growth restriction may be reduced perfusion of the intervillous space, before the development of placental adaptations to cope with oxidative stress.[15]

The underlying reason for the subchorionic haemorrhage and any subsequent mechanical effects of the hematoma could be another mechanism. Shallow trophoblast invasion and poor angiogenesis may result in friable blood vessels. A hematoma may generate a weak spot where the placenta can further separate from the uterine wall, leading to placental abruption, especially if it is located retroplacentally.[6] If the gestational sac does survive, however, reattachment to the endometrial wall might be sufficient to continue the pregnancy without any additional negative effects.

There are few limitations of the study. The study was performed in a single centre which is a tertiary care referral centre, thus it is not reflective of the whole population.

CONCLUSION

Women with first-trimester vaginal bleeding diagnosed to have SCH do not increase the likelihood of pregnancy wastage.

However, as the volume of the SCH increased the risk of pregnancy wastage increased. Multi-centre, larger, and prospective cohort studies are needed to determine the effect of SCH on various maternal and foetal outcomes.

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