

Ultrasonographic Evaluation of First Trimester Vaginal Bleeding

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ABSTRACT

Introduction: Vaginal bleeding after confirmation with a positive pregnancy test requires further assessment in order to identify normal or abnormal development of the pregnancy or a pathological condition that requires intervention. To evaluate the role of ultrasonography in patients with bleeding in the first trimester of pregnancy and to correlate ultrasonographic findings with clinical diagnosis thus helping the treating obstetrician in deciding the management protocol.

Materials and methods: The study included all the patients (inpatient and outpatient) with history of vaginal bleeding in the first trimester of pregnancy, referred from the Department of Obstetrics and Gynaecology. 158 patients presenting with bleeding in the first trimester of pregnancy were enrolled for the study.

Results: In our study fetal cardiac activity with closed internal os on USG was seen in 45 patients. 38 patients showed heterogenous thickened endometrium, no fetal cardiac activity was seen in 27 patients, intrauterine gestational sac without yolk sac or fetal node was seen in 17 patients. Sonographic features suggestive of ectopic pregnancy were present in 19 patients. 6 patients had homogenous apposed endometrium. USG showed echogenic mass with cystic areas in 6 patients.

Conclusion: The common causes of bleeding during first trimester of pregnancy include abortions, ectopic pregnancy and molar pregnancy. Ultrasound is a non-invasive, non-ionizing and easily available method of investigation that helps in the differentiation of causes of first trimester vaginal bleeding.

Keywords: Ultrasonographic, First Trimester, Vaginal Bleeding

INTRODUCTION

Vaginal bleeding in the first trimester of pregnancy is a common obstetric problem and causes worry and anxiety to the patient. It is a symptom which frequently heralds an abnormality, interrupting the normal development of an early gestation. (Hanamshetty A et al., 2014). Vaginal bleeding occurs in 15% to 25% of early pregnancies, while 50% of women who have vaginal bleeding in the first trimester of pregnancy will continue to have a viable pregnancy. Vaginal bleeding after confirmation with a positive pregnancy test requires further assessment in order to identify normal or abnormal development of the pregnancy or a pathological condition that requires intervention. (Snell BJ, 2009). First trimester bleeding is not only associated with miscarriage but has a higher rate of pregnancy related complications. It is associated with high risk of placental abruption, preterm labour, delivery of low-birth-weight infants and premature rupture of membranes. (Patel NG et al., 2014) The

possible causes of bleeding in first trimester of pregnancy include abortions, subchorionic haemorrhage, embryonic demise, anembryonic pregnancy, ectopic pregnancy and gestational trophoblastic disease. (Deutchman M et al., 2009). Ultrasound plays a role of utmost importance in confirming the pregnancy, site of pregnancy, viability and also in predicting whether a pregnancy has good chance of continuing or it is destined to fail or has already failed.

MATERIAL AND METHODS

The study was conducted in the Department of Radiodiagnosis and Imaging, Acharya Shri Chander College of Medical Sciences and Hospital, Sidhra, Jammu.

Selection of patients: -The study included all the patients (inpatient and outpatient) with history of vaginal bleeding in the first trimester of pregnancy, referred from the Department of Obstetrics and Gynecology.

Sample size: - 158 patients presenting with bleeding in the first trimester of pregnancy were enrolled for the study.

Inclusion criteria: - Patients who presented with vaginal bleeding anytime in the first 12 weeks of pregnancy.

Exclusion criteria: - Non obstetric causes for vaginal bleeding in first trimester of pregnancy.

All patients with more than 12 completed weeks of gestation are excluded from the study.

Method of collection of data: - The present study was a hospital based prospective study of patients who presented with vaginal bleeding in the first trimester of pregnancy.

Clinical details like age, parity, obstetric history, personal history, medical history, past history, menstrual history and details of present pregnancy in terms of period of amenorrhoea at the time of first episode of bleeding, amount and duration of bleeding, whether associated with pain abdomen or not and history of expulsion of clots was noted.

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A detailed clinical examination including general physical examination and pelvic examination was done to arrive at a provisional clinical diagnosis.

Patients were then be subjected to ultrasound examination. All the patients were subjected to transabdominal sonography. Transvaginal sonography was performed whenever transabdominal study showed inconclusive or equivocal results.

Equipment: - All the patients were scanned on Logiq GE C5 Premium Ultrasonography Unit and Voluson GE S8 Ultrasonography Unit. Transabdominal sonography was performed with 3.5 MHz electronic macro convex transducer and transvaginal sonography using 6.5 MHz end firing electronic transducer.

Statistical methods: - Collected data was analysed by calculating the sensitivity and specificity of clinical and ultrasound diagnosis in first trimester vaginal bleeding and then comparing them by using Chi-square test.

In our study, the age group of the patients ranged between 16-35 years. Majority of the patients i.e. 48% were in the age group of 21-25 years. 33% of the patients were between 26-30 years. 11% of the patients were in the age group of 31-35 years. Least number of patients were seen between 16-20 years constituting 8%.

In our study 58% of the patients were primigravida and 42% were multigravida.

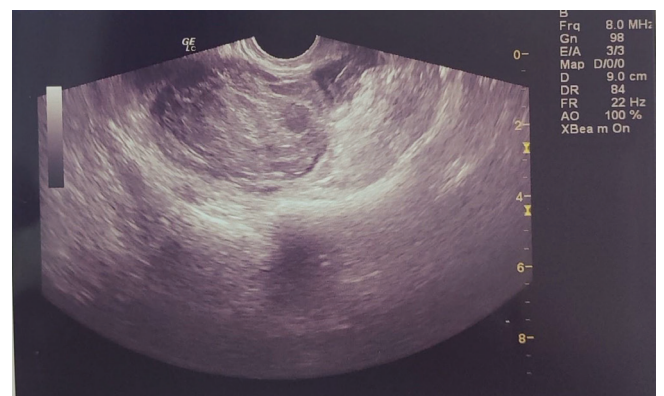
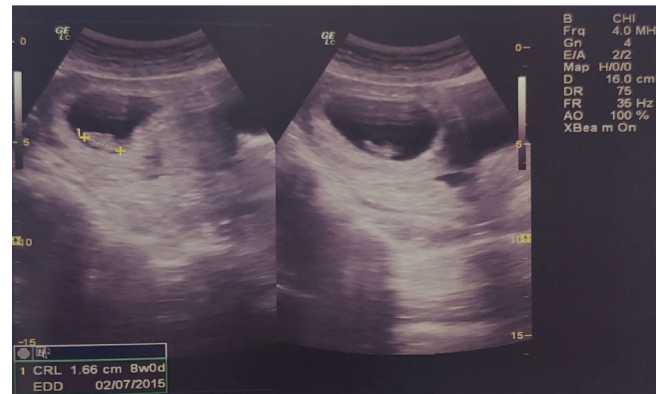
In our study first trimester bleeding was most common between 6-8 weeks of gestation (45%) and least (23%) during 10-12 weeks of gestation.

In our study, 52% of the patients had bleeding episodes that persisted for 1 to 2 days, 40% of the patients had bleeding for 2 to 3 days and 8 % of the patients had bleeding for 3 or more days.

RESULTS

In our study fetal cardiac activity with closed internal os on USG (threatened abortion) was seen in 44 patients. 38 patients showed heterogenous thickened endometrium (incomplete abortion), no fetal cardiac activity (missed abortion) was seen in 27 patients, intrauterine gestational sac without yolk sac or fetal node (anembryonic gestation) was seen in 17 patients. Sonographic features suggestive of ectopic pregnancy were present in 19 patients. 6 patients had homogenous apposed endometrium (complete abortion). USG showed echogenic mass with cystic areas (molar pregnancy) in 6 patients

- The most common clinical diagnosis in our study was threatened abortion (57%). Other cases were diagnosed as incomplete abortion (30%), missed abortion (4%), complete abortion (1%), ectopic pregnancy (6%), and molar pregnancy (2%).
- In our study out of 90 cases of threatened abortion diagnosed clinically only 39 cases were confirmed on ultrasound. Rest 51 cases were misdiagnosed clinically and correctly diagnosed as 14 cases of missed abortion, 13 cases of incomplete abortion and anembryonic gestation each, 8 cases of ectopic pregnancy and 2 case



each of complete abortion and molar pregnancy.

- Out of 30 cases of incomplete abortion diagnosed clinically only 16 cases were confirmed on ultrasound. Rest 14 cases were misdiagnosed clinically and correctly

diagnosed on ultrasound as 4 cases of missed abortion, 3 cases of anembryonic gestation, 1 case of complete abortion, 2 cases of ectopic pregnancy, 1 case of molar pregnancy and 3 cases of threatened abortion.

- Out of 6 cases of ectopic pregnancy diagnosed clinically 5 cases were confirmed on ultrasound. 1 case was

Parity	Number (n=158)	Percentage (%)
Primigravida	91	58
Multigravida	67	42
Distribution of patients according to parity:		

Period of gestation (in weeks)	Number (n=158)	Percentage (%)
6-8	71	45
8-10	51	32
10-12	36	23
Distribution of patients according to period of gestation:		

Duration (in days)	Number (n=158)	Percentage (%)
1-2	82	52
2-3	63	40
>3	13	8
Distribution of patients according to the duration of bleeding:		

diagnosed as complete abortion.

- 4 cases of missed abortion, 2 cases of molar pregnancy and 1 case of complete abortion diagnosed clinically were confirmed on ultrasound.
- According to the diagnosis made on ultrasound threatened abortion was seen in 28% of the patients, incomplete abortion in 24 %, complete abortion in 4%, missed abortion in 17% of the patients.11% of the patients were diagnosed as anembryonic gestation. Ectopic pregnancy and molar pregnancy constituted 12 % and 4% respectively.
- In our study various abortions were the major cause of bleeding constituting 72%. Ectopic pregnancy and molar pregnancy constituted 13% and 4% respectively.
- Among the various types of abortions threatened abortion constituted majority of the cases. It was seen in 28 out of 72 patients constituting 38.6%.
- On ultrasonography the most common finding in ectopic pregnancy was complex adnexal mass seen in 6 patients (50%). Pseudogestational sac in uterus was seen in 1 out of these 6 patients. Adnexal gestational sac was seen in 4 patients (33.3%) out of which 2 had yolk sac within it and 1 patient had fetal node as well showing cardiac activity. Hemoperitoneum was seen in 2 patients (16.6%) with ruptured ectopic pregnancy.
- The sensitivity of clinical diagnosis was 92.5%

Pregnancy	Ultrasonographic features	Number (n=158)	Percentage (%)
Viable	Fetal cardiac activity, internal os closed	45	28
Non-viable	Heterogenous thickened endometrium	38	24
	Fetal pole with no cardiac activity	27	17
	Intrauterine gestational sac without yolk sac/ fetal node	17	11
	Ectopic pregnancy	19	12
	Homogenous apposed endometrium	6	4
	Echogenic mass with cystic areas	6	4
Ultrasonographic features of patients			

Cases	No. of patients diagnosed clinically	Follow up and Result
Threatened abortion	90	25-Threatened abortion 14-Missed abortion 13-Incomplete abortion 13-Anembryonic gestation 2-Complete abortion 8-Ectopic pregnancy 2-Molar pregnancy
Incomplete abortion	30	16-Incomplete abortion 4-Missed abortion 3-Anembryonic gestation 1-Complete abortion 2-Ectopic pregnancy 1-Molar pregnancy 3-Threatened abortion
Missed abortion	4	4 cases were diagnosed as missed abortion.
Ectopic pregnancy	6	5 cases were diagnosed as ectopic pregnancy 1 – complete abortion
Molar pregnancy	2	2 cases were diagnosed as molar pregnancy.
Complete abortion	1	1 case was confirmed
Comparison of clinical and ultrasound diagnosis		

and specificity was 55.5 % for diagnosing viable pregnancies. For diagnosing non-viable pregnancies clinical criteria were having sensitivity of 59.2% and specificity of 89.1%. In cases of ectopic pregnancy, the sensitivity of clinical diagnosis was 62.5 %. However, its specificity was 100%.

- The sensitivity and specificity of ultrasound diagnosis was 100% for diagnosing viable pregnancies. For diagnosing non-viable pregnancies ultrasound was having sensitivity of 100% and specificity of 97.5%. In cases of ectopic pregnancy, the sensitivity of ultrasound diagnosis was 92.3%. However, its specificity was 100%.

DISCUSSION

About one fourth of all pregnant women experience spotting or bleeding in the early weeks of pregnancy and one half of those who bleed usually miscarry. It is an alarming symptom which frequently heralds an abnormality, interrupting the normal development of an early gestation. First trimester bleeding is a common presentation in the emergency room. The significance of bleeding in early pregnancy in a given patient may range from an inconsequential episode to a life-threatening emergency. By mere clinical history and examination definitive diagnosis is usually impossible. Many times, symptoms are misleading resulting in delay in the diagnosis and treatment. Prior to the advent of USG, all these patients were empirically managed only clinically. The first application of diagnostic ultrasound to obstetrics and gynaecology by Donald and associates has made a major contribution in making prenatal diagnosis. Obstetric ultrasound has evolved as a primary diagnostic modality in the first trimester vaginal bleeding. Ultrasound plays a key role in accurately clinching the diagnosis. A normal pregnancy with excellent chance of viable birth can be differentiated using ultrasound from a pathological pregnancy which warrants immediate termination. It helps to institute timely management and even averting fatality as in ectopic pregnancy. The location, appearance and size of the gestational sac and presence of intact fetal echoes gives a complete picture and helps in management of the patient and also in predicting the outcome. Thus, ultrasound helps the clinicians in establishing a definitive diagnosis so that appropriate care can be offered to the patients.

TVS image of a patient who presented with spotting in 10th week of gestation shows live fetus with small subchorionic bleed suggesting threatened abortion

TAS image in a patient with threatened abortion reveals fetal pole with cardiac activity and small subchorionic haemorrhage.

TAS image in a patient who presented with amenorrhoea 8 weeks followed by bleeding per vaginum reveals a complex right adnexal mass with empty uterine cavity consistent with ectopic pregnancy

TVS image in the same patient delineates the right adnexal complex mass.

CONCLUSION

The common causes of bleeding during first trimester of pregnancy include abortions, ectopic pregnancy and molar pregnancy. Ultrasound is a non-invasive, non-ionizing and easily available method of investigation that helps in the differentiation of causes of first trimester vaginal bleeding. Ultrasound is helpful in the decision-making algorithm about the safe continuation of the pregnancy, timely intervention for abnormal pregnancy. After Sonography, treatment can be more accurately decided and better patient care can be provided than merely relying on clinical diagnosis alone.

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