



Original Article

Role of Ultrasound in First Trimester Vaginal Bleeding: An Observational Study at a Tertiary Care Hospital in Mardan, Pakistan

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ABSTRACT

Vaginal bleeding in first trimester is most common complication of pregnant women. The ratio of vaginal bleeding in pregnant women is 20-25%. About 50% of pregnant women experiencing vaginal bleeding in first trimester have viable pregnancy. 50% cases of abortion are reported in first trimester vaginal bleeding. Therefore, it is necessary to evaluate the significance of ultrasonography in diagnosis of first trimester vaginal bleeding. **Objective:** Objective of the study is to elaborate the fundamental role of ultrasonography in first trimester vaginal bleeding. The ratio of misdiagnosis in putatively nonviable pregnancy will be reduced by complete understanding of ultrasonography significant. In this way the premature interventions can be avoided that ultimately leads to mismanagement. **Study Design:** It was an observational study with statistical approaches, conducted in BKMC / MMC, Mardan for the duration of six months from December 2020 to May 2021. **Methods:** All the antenatal women having complaint of first trimester vaginal bleeding visited the hospital was included in this prospective observational study. Those who met the inclusion and exclusion criteria set by the Gynecology department of Hospital were followed for further analysis study. **Results:** Out of the 90 patients included in the study, 51% cases were of threatened abortion among viable pregnancies and 6% cases of normal pregnancy were reported. Various types of abortion were reported in the patients, out of which 11% cases were of missed abortion, 1% of complete abortion, and 11% of incomplete abortion, 5% of ectopic pregnancy and 10% of blighted ovum. The inevitable abortion cases were 3% and 1.1 % cases of hydatidiform mole. **Conclusion:** After developing better understanding of correlation between ultrasonography and first trimester vaginal bleeding, sonologist can elaborately explain the cause of vaginal bleeding. For the diagnosis of first trimester vaginal bleeding ultrasonography is the non-invasive imaging technology.

INTRODUCTION

Vaginal bleeding is the most common symptom during first trimester. First trimester can also be called as phase of rapid changes that includes fertilization, blastocyst formation, zygote implantation leading to gastrulation and neurulation [1,2]. Vaginal bleeding is the frequent obstetric emergency during first trimester. The previous studies indicated that 16% of all the pregnant women experience the vaginal bleeding. The first trimester vaginal bleeding can result in spontaneous abortion to life-threatening

blood loss [2,3]. The ratio of abortion is about 10-20%. Ultrasonography in first trimester of pregnancy play significant role in assessment of the cause of bleeding per vagina [3,4]. This assessment facilitates to develop better understanding of viability and location of pregnancy either intrauterine or extrauterine [5]. The color Doppler imaging combined with high-resolution transvaginal sonography can be used for assessment of uteroplacental vascularization volumes that provide prognostic values by

measuring the uteroplacental blood flow [6,7]. So, with the advent of growing technology now we can detect the intra-decidual gestational sacs within 35 days of pregnancy [8,9]. In about 50% cases of first trimester vaginal bleeding the women suffered from miscarriages. In order to reduce the ratio of maternal mortality the early diagnosis of first trimester bleeding is required and the advancing ultrasonography paving ways to diagnose such complications[10].

METHODS

It was an observational study with statistical approaches, conducted in Bacha Khan Medical College/ Mardan Medical Complex, Mardan for the duration of six months from December 2020 to May 2021. The ninety pregnant women with the 12 week or less than 12 weeks gestation periods and vaginal bleeding complaint were included in this observational study. Ethical committee of the hospital approved the study. All the antenatal women with the first trimester bleeding visited hospitals from September-March were included in the study. The non-pregnant women with the vaginal bleeding were excluded from the study. Clinicians performed the provisional diagnosis of all the patients. After the clinical evaluation of the patients, ultrasonography was suggested for further analysis. By using 3.5 MHz frequency transducer, Trans abdominal ultrasonography was conducted. Trans abdominal ultrasonography of few patients depicted the inconclusive results, they were referred with transvaginal ultrasonography with the 5-7 MHZ frequency transducer. Ectopic pregnancy was diagnosed in 6 cases, while in 8 out of eighty cases were diagnosed with the abnormal intrauterine gestation. The correlation between clinical finding and imaging finding was evaluated. Statistical Package for Social Sciences (SPSS version 21.0, IBM Corporation, USA) was used for statistical analysis of data. N (% of cases) represented the data of categorical variables, while the Mean and Standard deviations represent the data of continuous variables. For the clinical diagnosis the in-depth statistical analysis was carried out. The sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV) and accuracy values were calculated.

RESULTS

The patients were divided into groups on the basis of age. The standard deviation of each age group was calculated. Out of 90 cases studies, 51% of threatened abortion, 11% of missed abortion and incomplete abortion. Normal pregnancy was observed in 6% of cases. 1% cases of complete abortion, and 3% cases of inevitable abortion were reported. The mainstay in diagnosis of first trimester

vaginal bleeding is ultrasonography. The 5% cases of ectopic pregnancy, 10% cases of blighted ovum and 1% cases of hydatidiform mole was observed. The table showed that the major number of cases of first trimester vaginal bleeding are more common in the age group ranging from 23-27 years. While the patients having age between 18-22 years share only 20% cases. The vaginal bleeding is also common in women of age ranging between 28-32 years (Table 1).

Age Groups (years)	No. of cases (%)
18-22	18 (20)
23-27	45 (50)
28-32	15 (16.6)
33-37	12 (13.3)
Total	90 (100)

Table 1: Clinical diagnosed cases distribution according to ultrasonography diagnosed

Below table 2 showed the percentage of abortions and pregnancies. Out of 90 cases studies, 51% of threatened abortion, 11% of missed abortion and incomplete abortion. Normal pregnancy was observed in 6% of cases. 1% cases of complete abortion, and 3% cases of inevitable abortion were reported. The mainstay in diagnosis of first trimester vaginal bleeding is ultrasonography. The 5% cases of ectopic pregnancy, 10% cases of blighted ovum and 1% cases of hydatidiform mole was observed.

Variables	Threatened Abortion		Incomplete Abortion		Missed Abortion		Complete Abortion		Normal pregnancy		Ectopic pregnancy		H mole		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
USG diagnosis	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Threatened Abortion	39	60.9	2	22.2	3	37.5	0	0	2	66.6	0	0	0	0	46	51.1
Missed Abortion	7.5	12	1	11.1	2	25	0	0	0	0	0	0	0	0	10	11.6
Incomplete Abortion	4	6.2	3	33.3	1	12.5	2	50	0	0	0	0	0	0	10	11.1
Normal Pregnancy	5	7.8	0	0	0	0	0	0	1	33.3	0	0	0	0	6	6
Complete Abortion	0	0	1	11.1	0	0	0	0	0	0	0	0	0	0	1	1.1
Inevitable Abortion	1	1.5	0	0	1	12.5	1	25	0	0	0	0	0	0	3	3
Ectopic Pregnancy	1.5	2.3	2	22.2	0	0	0	0	0	0	1	100	0	0	4	5
Blighted Ovum	6	9.3	0	0	1	12.5	1	25	0	0	0	0	1	100	9	10
H mole	0	0	0	0	0	0	0	0	0	0	0	0	1	100	1	1.1
Total	64	100	9	100	8	100	4	100	3	100	1	100	1	100	90	100

Table 2: the percentage of abortions and pregnancies

DISCUSSION

Our study indicated that the women of age ranging between 23-27 years are more prone to suffer from first trimester vaginal bleeding [11,12]. Shivanagappa et al., conducted the similar study to find the correlation between first trimester vaginal bleeding and age, their results showed that women of the age group 21-25 years are more prone to vaginal bleeding in first trimester. In the present study, out of 90 cases, 51% were of threatened abortion, 11% of missed abortion and 11% of incomplete abortion. Normal pregnancy was observed in 6% of cases. 1% cases of complete abortion, and 3% cases of inevitable abortion were reported [13]. The study conducted by Khatod et al on the 107 patients, and their results showed 76.64% cases of threatened abortion, 4.67% cases of complete abortion, 6.54% as incomplete abortion, 3.74% as inevitable abortion, 3.74% as missed abortion, 4.67% as ectopic pregnancy [14,15]. By clinical examination of 165 patients Shivanagappa et al., concluded that 57% cases were of threatened abortion, 31% of incomplete abortion, 4% of missed abortion, 6 % ectopic pregnancy and 1.2% hydatidiform mole and 0.8 % complete abortion [16]. In our study, 51% cases of threatened abortion was diagnosed by ultrasound. A study showed 46 out of 94 cases of threatened abortion. They observed 15 cases of missed abortion, 7 cases of ectopic abortion, and 3 cases of molar pregnancy [17,18]. The clinical findings of our study and their comparison to the clinical findings of Deepti Kurmi shows that it not only removes the ambiguities of the clinical diagnosis but also pave way towards most accurate diagnosis. This indicates that the first trimester vaginal bleeding is more commonly seen in the women with the age group of 23-27 years with the highest ratio of 50%. The women of the age group 18-22 years attained second slot with the ratio of 20% [17]. In our study the number of cases of incomplete abortion were 6.2% while the results of other study were close enough to 4.65%. The 60.9% cases of threatened abortion were reported in our study, in case of

other study 58.13% cases of threatened abortion were reported [19]. A study reported the viable pregnancy in 64% cases while in present study indicated the viable pregnancy in 60.9% cases. The ratio of non-viable pregnancy in our study is 39.24%, while in other study clinical examination it is 46% [20].

CONCLUSIONS

To differentiate the various conditions and phases of first trimester bleeding in pregnant women, the ultrasonography is most accurate and non-invasive diagnostic tool. Early diagnosis of gestational-related problems with the help of ultrasonography, pave the new ways towards prompt treatment of patients and reduce mortality rates. Advancement in field of ultrasonography, will not only assure the safety of pregnant-women and children, but also will alleviate the anxiety among the couples.

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