Original Research Article

A correlational study of ultrasound diagnosis with clinical and operative diagnosis in causes of complications in first trimester

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Abstract

Background: The pathologies occurring in early pregnancy are common but some may be life threatening and it is therefore essential to promptly diagnose and treat complications to achieve the best fetal and maternal outcomes. **Aim and objective:** To correlate the ultrasound diagnosis with clinical and operative diagnosis in causes of complications in first trimester. **Methodology:** Present study was a prospective study carried out in the fifty women, who presented with symptoms in first trimester such as vaginal spotting or bleeding, pain abdomen in the first trimester of pregnancy referred to sonography department. All patients underwent transvaginal and transabdominal ultrasonography. These findings were correlated with clinical diagnosis and operative diagnosis of the patients. Data was analysed with appropriate statistical tests. **Results:** In threatened abortion ultrasound had accuracy rate of 100 %, while clinical accuracy was 54%.In missed abortion, ultrasound has accuracy rate of 100 %. While clinical accuracy is only 4 %. In incomplete abortions, the clinical accuracy rate is 24 % while ultrasound had an accuracy of 100 %. In complete abortion ultrasound has accuracy rate of 100 %. While clinical accuracy is only 6 %. In cases of ectopic pregnancy, Clinical accuracy was 8 % while ultrasound accuracy was only 70 %. Out of the two clinically diagnosed cases of vesicular mole, only one was sonologically diagnosed as vesicular mole with an accuracy rate of 100%. Clinical diagnosis was only 4 % accurate.

Key Word: clinical and operative diagnosis.

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INTRODUCTION

First trimester pregnancy is the initial 12 weeks of the pregnancy, which is the most crucial time in both the women and the growing fetus, since they are more prone to face complications such as, spotting, pervaginal bleeding and pain abdomen which represents a definite threat to the developing embryo / fetus and constitute a source of anxiety both to the women and her clinician. Most common symptoms with which patients present with, in the first trimester are: spotting, vaginal bleeding, pelvic/abdominal pain, dysuria and frequency of micturition. Bleeding per vaginum is a relatively common event in the first trimester, reported to occur in 15% to 25% of all pregnancies.[1-8] The detection and the diagnosis of causes of first trimester bleeding per vaginum, based on the clinical examination alone is often inconclusive and doubtful, therefore there is a need for further evaluation by non invasive methods such as ultrasonography. Real time sonography is a noninvasive modality that is extremely useful to arrive at an accurate diagnosis. Nearly i.e. 27-30% of all pregnant women in their first trimester complain of bleeding per vaginum. In these women who present with bleeding per vagina, during their first trimester, several diagnostic possibilities can be considered. The differential diagnosis includes 1. Threatened abortion with a viable intrauterine pregnancy 2. Missed abortion 3. Incomplete abortion 4. Complete abortion 5. Ectopic pregnancy 6. Gestational trophoblastic disease Ultrasound in women who presents with the bleeding in the first trimester helps 1. In confirming the pregnancy. 2. To know if the

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pregnancy is intrauterine or extrauterine. 3. To assess the period of gestation. 4. In early recognization of any associated pelvic abnormality. 5. To confirm the viability of the fetus. 6. To confirm or rule out suspected molar pregnancy. 7. To assess causes of first trimester pregnancy failure such as blighted ovum, incomplete, complete or missed abortion 8.To rule out other pelvic causes for bleeding.

The aim of this study is to evaluate role of ultrasonography in prospective evaluation of causes in symptomatic first trimester pregnancy.

MATERIAL AND METHODS

Present study was a prospective study carried out in the department of Radiodiagnsois, MVJMC nad RH during November 2011 to August 2013. Study population was Fifty women, who presented with symptoms in first trimester such as vaginal spotting or bleeding, pain abdomen in the first trimester of pregnancy referred to our department for sonography.

Inclusion criteria: 1.Positive pregnancy test. 2.First trimester up to 12 weeks of embryonic gestational age. 3. Chief complaint of at least one of the following: vaginal spotting / bleeding, pain abdomen.

Exclusion criteria:

1. Asymptomatic patients in the first trimester.
2. All the patients with more than 12 weeks gestation.
3. Patient presenting with profuse bleeding necessitating emergency evacuation.
4. Patient who refuse to get admitted in the hospital.

Study was approved by ethical committee of the institute. A valid written consent was taken from the patients after explaining study to them. Machine used for examination was GE VOLUSION 730 PRO machine. Curvilinear array transducer with frequency of 2- 6 MHz was used for TAS. Transvaginal probe of frequency 7-10MHz for TVS.

For all the examinations in this study full bladder technique was used for Transabdominal scans and empty bladder technique for transvaginal scans. The curvilinear probe was placed in the suprapubic region over the bladder and was angled caudally to obtain longitudinal section of the uterus, cervix and vagina. Then the orientation was changed to transverse, to study the adnexal regions by angling the probe gently form caudal to cranial end by 15 – 20 degrees. While doing so, vaginal walls, cervix and body of the uterus were studied. For the transvaginal scan the patient was placed in the lithotomy position having emptied her bladder. The transvaginal probe is covered with a protective sheath, usually a surgical glove and adequate coupling gel is applied. The transducer is inserted in the vagina. Initially a longitudinal scan was done followed by a transverse scan. During examination, the size, shape, version of the uterus were noted. The presence or absence of the gestational sac and if present its size, shape and its measurement were taken to obtain the mean sac diameter. When the presence of the sac was ascertained, then the presence or absence of the foetal node was looked for. If the sac was empty, its shape and gestational age were calculated. If the fetal node was seen then it was observed foe the fetal cardiac activity, fetal movements and any other obvious congenital anomalies. Depending on the observation, appropriate measurements of the gestational age were obtained i.e., CRL or BPD. Patients in whom scan was done late in first trimester, location of the placenta, its maturity and evidence of hemorrhage if any were noted. Lastly adnexal region was scanned to confirm or rule out ectopic pregnancy, to look for any collection in the pouch of Douglas and to see if there are any masses. All the cases of threatened abortion were followed up and the rest with pregnancy were managed accordingly. Statistical analysis was done in EPI-6 statistical soft ware.

RESULTS

In the present study, the majority of the patients were in the age group of 26-30 years, totaling 17(36%), 16 patients (32%) were of 20-25 years, 11 patients (21%) were less than 20 years, 6 patients (11%) were above 30 years. In the present study, 28 women (56 %), with more than 10 weeks of amenorrhea, complained of bleeding. The least problematic period was 8 – 10 weeks during which period of pregnancy only 6 patients(12 %) has bleeding, 16 cases (32 %) less than 8 weeks complained of bleeding. In the present study, clinically 27 cases (54 %) were diagnosed as threatened abortion, 12 cases (24 %) as incomplete abortion, 4 cases (8 %) as ectopic pregnancy, 3 cases (6 %) as complete abortion, 2 cases (4 %) as missed abortion, 2 cases (4 %) as gestational trophoblastic disease. (table 1) In the present study , Out of the 50 cases, ultrasound diagnosis of threatened abortion was made in 18 patients(36 %), missed abortion in 12 patients(24 %), incomplete abortion in 11 patients(22 %), complete abortion in 5 patients(10 %), ectopic pregnancy in 5 patients(6%)and gestational trophoblastic disease in 1 patient(2%). (table 2) By correlating clinical and ultrasound diagnosis, it was found that there was disparity between the two diagnosis. The disparity was more for threatened abortion, missed abortion, and complete abortion. Clinically it was not possible to diagnose blighted ovum, complete and inevitable abortions. So ultrasound examination had an upper hand in diagnosis of these cases. The total number of disparities between clinical and ultrasound diagnosis of the causes of bleeding in first trimester was 24 and the percentage of disparity is 44.4%. (table 3)

The accuracy of the ultrasound compared to that of clinical diagnosis was 100 % in detection of threatened abortion, blighted ovum, incomplete abortion, complete abortion and gestational trophoblastic disease. It was found that the accuracy of 70 % in the diagnosis of ectopic pregnancy. One case of the 4 ectopic pregnancies was wrongly diagnosed as Tubo ovarian mass by ultrasound examination. Out of 18 cases that were sonologically diagnosed as threatened abortion, 12 continued as normal pregnancy, two opted for MTP and tubectomy and 2 underwent dilatation and curettage. Out of the 12 patients who continued pregnancy, 11 had full term normal deliveries and one patient underwent emergency LSCS for foetal distress. The infants were healthy, no congenital anomalies were seen. Out of 12 cases 9 cases were diagnosed as embryonal demise and 3 were diagnosed as blighted ovum. The accuracy of ultrasound in diagnosis of missed abortion is 100%. Of the 11 cases of incomplete abortions diagnosed by ultrasound all were correctly diagnosed. Of the 5 cases of complete abortions diagnosed by ultrasound, all were correctly diagnosed. So in the diagnosis of complete and incomplete abortions, ultrasound has an accuracy of 100%. Out of 3 cases of ectopic pregnancy, 2 cases were correctly diagnosed by ultrasound, another was misdiagnosed as Tuboovarian mass and was proved to be ectopic pregnancy in laporotomy. Ultrasound has an accuracy of 70 % in the present study in the diagnosis of ectopic pregnancy. Of the one case of vesicular mole, it was correctly diagnosed as vesicular mole on evacuation. Ultrasound has an accuracy of 100% in the detection of vesicular mole in the present study.

Table 1: Distribution of 50 cases of present study based on clinical diagnosis

Clinical diagnosis	No. Of cases
Threatened abortion	27
Incomplete abortion	12
Ectopic pregnancy	04
Complete abortion	03
Missed abortion	02
Gestational trophoblastic disease	02
TOTAL	**50**

Table 2: Distribution of 50 cases of present study based on ultrasonological diagnosis

Ultrasound diagnosis	No. Of cases
Threatened abortion (normal pregnancy + intrauterine hematoma)	(12 + 6)=18
Missed abortion (Embryonal demise + Blighted ovum)	(9 + 3)=12
Incomplete abortion (Retained products of conception)	11
Complete abortion	05
Ectopic pregnancy	03
Gestational trophoblastic disease	01
TOTAL	**50**

Table 3: Correlation of number of cases based on ultrasound and clinical diagnosis

CASES	CLINICAL DIAGNOSIS	USG DIAGNOSIS	DISPARITY
Threatened abortion	27	18	9
Missed abortion	02	12	10
Incomplete abortion	12	11	1
Complete abortion	03	05	2
Ectopic pregnancy	04	03	1
Gest.Trophoblastic Disease	02	01	1
TOTAL	**50**	**50**	**24**

Table 4: Comparision of clinical and ultrasound diagnostic accuracy

No. of Cases	Clinical accuracy rate	USG accuracy rate
Threatened abortion	54 %	100
Missed abortion	4 %	100
Complete abortion	6 %	100
Incomplete abortion	24 %	100
Ectopic pregnancy	8 %	70
Gest.tropho.disease	4 %	100

Table 5: Follow up of cases diagnosed clinically

CASES	CLINICAL DIAGNOSIS	USG DIAGNOSIS	FOLLOW UP AND RESULTS
Threatened abortion	27	18	Out of 27 cases: -12 continued as normal pregnancy. - 4 were diagnosed as subchorionic hemorrhage. - 2 cases diagnosed as threatened abortion underwent MTP tubectomy - 4 MA were clinically mis- diagnosed as TA- likewise - 4 Blighted ovum as TA 1 was diagnosed as vesicular mole .
Missed abortion	02	12	Out of 2 cases both cases were correctly diagnosed as MA -7cases were misdiagnosed as TA. - one case misdiagnosed as ectopic pregnancy
Incomplete abortion	12	11	Out of 12 cases -11 were diagnosed as incomplete abortion 1 TA case is misdiagnosed as IA.
Complete abortion	03	05	Out of 3 cases -3 cases were diagnosed as CA.
Ectopic pregnancy	04	03	- 2 cases were clinically misdiagnosed as TA Out of 4 cases -3 cases were diagnosed as ectopic pregnancy.
Gest.Trophoblastic disease	02	01	Out of 2 cases -1 was diagnosed as vesicular mole and another was misdiagnosed as threatened abortion.

Table 6: Follow up of cases diagnosed by ultrasound

CASES	CLINICAL DIAGNOSIS	USG DIAGNOSIS	FOLLOW UP AND RESULTS
Threatened abortion	27	18	Out of 18 cases: -12 continued as normal pregnancy. - 4 were diagnosed as subchorionic hemorrhage. - 2 cases diagnosed as threatened abortion underwent MTP tubectomy - 4 MA were clinically mis- diagnosed as TA- likewise - 4 Blighted ovum as TA 1 was diagnosed as vesicular mole.
Missed abortion	02	12	Out of 12 cases: -9 cases were diagnosed as embryonal demise and -3 were diagnosed as BO.
Incomplete abortion	12	11	Out of 11 cases all were correctly diagnosed as IA
Complete abortion	03	05	Out of 5cases -all the cases were correctly diagnosed as CA.
Ectopic pregnancy	04	03	Out of 3 cases, 2 cases were correctly diagnosed as ectopic. Another ectopic pregnancy was misdiagnosed as TO mass
Gest.Trophoblastic Disease	02	01	Was correctly diagnosed as Vesicular mole.

DISCUSSION

In our study, we have evaluated 50 cases first trimester patients with symptoms to know the role of ultrasound examination versus clinical examination. By mere clinical examination, it was not possible to diagnose many cases correctly. There was disparity of 44.44 % between clinical and ultrasonological diagnosis. Out of the 27 cases which were clinically diagnosed as threatened abortion, only 18 were confirmed as threatened abortion by ultrasound. Ultrasound proved much more accurate than clinical diagnosis with accuracy rate of 100 %, while clinical accuracy was 54%. Only 2 cases were clinically diagnosed as missed abortion, but 12 cases were diagnosed by ultrasound as missed abortion. Out of the 12 cases, 9 were

diagnosed as embryonal demise and 3 were diagnosed as blighted ovum suggesting accuracy rate of 100 %. While clinical accuracy is only 4 %. Out of the 12 clinically diagnosed cases of incomplete abortions, 11 were diagnosed by ultrasound as incomplete abortion. The clinical accuracy rate is 24 % while ultrasound had an accuracy of 100 %. Only 3 cases were clinically diagnosed as complete abortion, but 5 cases were diagnosed by ultrasound as complete abortion suggesting ultrasound accuracy rate of 100 %. While clinical accuracy is only 6 %. Of the 4 clinically diagnosed cases of ectopic pregnancy, 3 were diagnosed as ectopic by ultrasound while one case was misdiagnosed as tuboovarian mass. Clinical accuracy was 8 % while ultrasound accuracy was only 70 %. Out of the two clinically diagnosed cases of vesicular mole, only one was sonologically diagnosed as vesicular mole with an accuracy rate of 100%. Clinical diagnosis was only 4 % accurate. Similar to our study Joupilla *et al.* [9] observed 38% threatened abortions ,26% missed abortions, 18% incomplete abortion, 3% complete abortion and 1% gestational trophoblastic disease. In a study by Damania *et al.* [10] 60% threatened abortion, 15.73% missed abortion, 5.94% incomplete abortion, 9.79% complete abortion, 5.24% ectopic pregnancy and 3.15% gestational trophoblastic disease. Raja and Rajan *et al.* [11] observed maximum (54.05%) patients with threatened abortions, 24% missed abortions, 11.76% ectopic pregnancy and 35.29% patients with gestational trophoblastic disease.

Similar to our study, Rama Sofat *et al.* [12] observed 50% patients with threatened abortions, 10% missed abortions, 2.2% incomplete abortion, 9% ectopic pregnancy and 5.5% gestational trophoblastic disease.

CONCLUSION

Ultrasonography in present study has helped in establishing a correct diagnosis of 44.44% of clinically misdiagnosed cases apart from confirming the diagnosis in the rest of the cases**.**

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