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Research Article

ULTRA SONOGRAPHIC EVALUATION OF VAGINAL BLEEDING IN FIRST TRIMESTER OF PREGNANCY

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Abstract

Two non invasive diagnostic modalities available to the practitioner are sonography and endocrine evaluation of the pregnancy. These two modalities used in conjunction are extremely valuable in the management of the complication. In view of increasing availability of USG equipment in practice, a study, USG and clinical evaluation of cases having bleeding per vaginum in early pregnancy will be undertaken. Vaginal bleeding during early part of pregnancy often implies presence of an under lying abnormality which cannot be diagnosed conclusively by clinical examination. USG is helpful in all such cases. In the present prospective study 100 patients who attended Index Medical College and Hospital O.P.D with complaints of first trimester bleeding. Maximum patients found were from age group of 21 to 24 years and between 8-12 weeks of pregnancy

Key words:- first trimester pregnancy, ultrasound, vaginal bleeding,

INTRODUCTION

Normal human ear can detect frequencies ranging from 20 Hz to 20,000 Hzs. Sound frequencies above 20,000 Hzs is termed ultrasound for most medical uses, frequencies from 1 – 9 million Hzs are used. Ultrasound is known as SONAR i.e. sounds navigation and ranging.

Sonography in Obstetrics has introduced by Ian Donald & Colleagues in 1958 (of Glasgow University in Great Britain) and is now regarded as one of the major milestones of modern antenatal care.

Now it is quite possible to device several types of data having vital bearing on obstetric management. As the technical advance in this field is astonishing precise structure and functional information can be obtained about the fetus and environment directly with a non invasive diagnostic tool which is safe over if used repeatedly and is quick inexpensive, sensitive, causing no discomfort to the patient effective at any time of gestation.

It also plays vital role in the performance of amniocentesis and fetoscopy. In utero intervention procedure such as exchange transfusion can be performed under USG guidance.

Doppler USG in assessment of blood flow in foetal umbilical artery helps in the management of pregnancies with complication like IUGR Diabetes and pre eclampsia as it helps to understand the prognosis of foetus.

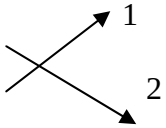
As the foetal anatomy can be delineated, USG affords to detect causes of first trimester bleeding. Bleeding and abdomen pain are two important complication of first trimester of pregnancy vaginal bleeding in the first trimester is seen in10-15% of pregnancies, the bleeding occurs from 9-12th weeks of pregnancy, 10-15% of pregnancies in which there is bleeding at this time, will terminate in spontaneous abortion.

The present study sonographic evaluation of vaginal bleeding in first trimester of pregnancy has been carried out in Department of Radiodiagnosis, Index Medical College and Research Centre Indore in close association with the Department of Obst. & Gynae.

MATERIAL AND METHODS

In this study 100 cases of bleeding per vaginum were included out of patient who attended the O.P.D. of Index Medical College and Hospital, Indore and admitted in antenatal wards.

Material –

USG machine 

Transducers - 3.5 MHz - sector

Trans vaginal – 5.0- 7.0 MHz
Jelly
Comfortable bed to be patient
Image mode – B mode and M – Mode

Methods –

The patient name, age, occupation and address were recorded on case sheet (Pro-forma). A detailed history of the complaints and their onset, duration and process was elicited. The menstrual history as the last menstrual period, past menstrual cycles were taken in detail, Obstetric history, marital life and history of any previous treatment were noted.
General physical examination of the patients was done to exclude any apparent pathology.

Investigation –

Routine examination of blood, urine, blood VDRL and HIV of both husbands & wife was done. Investigation for systemic diseases like T.B. or Diabetes etc. were carried out.

Preparation of the patients

1. For Transabdominal –

Patients was asked not to void urine 3-4 hours before undergoing USG examination. She was asked to drink 3-4 glasses of water and a cup of tea. A full urinary bladder is necessary for the adequate examination of the female patients. A distended bladder accomplishes several purposes.
As a rule of thumb the bladder should be sufficiently distended so that the uterine fundus is visible. In patient who may require prompt surgery retrograde filling of the bladder can be done or transvaginal USG can be performed.

2. For Transvaginal

Empty bladder is the requisite patient is placed in lithotomy position TVS probe is covered with jelly and condom is applied over it and transducer introduced in the vagina for examination.

Technique for scanning

Machine is adjusted with proper contrast and brightness.

Ultrasonic gel is applied to the abdomen of pregnant lady.

Whole of the uterus is scanned with serial transverse and parasagittal scans to know the presence of gestation sac, foetal pole, cardiac activity etc.

Goals of first Trimester sonography

A).Localization of the gestational sac.

- Intrauterine
- Ectopic

B) Identification of

- Yolk sac
- Foetal pole
- Foetal cardiac activity
- Foetal Movements
- Characterization of Gestation sac, yolk sac & fetal pole
- Chorionic plate
- Traphoblastic reaction
- Amniotic fluid

C) Estimation of menstrual age of the pregnancy mean Gestational sac diameter/CRL.

- Assessment of multifetal pregnancy.
- No. of embryos
- Chorionicity and amnionicity.

No. of yolk sacs present can be helpful in determining amnionicity of pregnancy.

whole of the uterus, Gestation sac and embryo are scanned thoroughly and if any deviation from the normal is found it is again scanned with special attention, which if turns out to be abnormal is then recorded.

OBSERVATION

One hundred patients with vaginal bleeding in first trimester of pregnancy formed the study group. The age of patient ranged from approx. 25-29 years and gravidity from 1 to 8.

Table No. I - Clinical causes of bleeding in first trimester.

Causes	**No. of cases**
Various types of Abortion	71
Ectopic	21
Vesicular mole	8
Total	**100**

The commonest of cause of bleeding during the first trimester of pregnancy was abortion (Table I).

TABLE – II Correlation of clinical diagnosis with ultrasound diagnosis

Clinical Diagnosis	No. of cases	Ultrasound diagnosis	No. of cases
Threatened Abortion	62	Missed Abortion Threatened abortion Blighted Ovum Incomplete Abortion	19 29 13 1
Missed Abortion	8	Blighted Ovum Incomplete Abortion Missed pregnancy	6 1 1
Incomplete Abortion	1	Incomplete Abortion	1
Ectopic pregnancy	12	Ectopic Pregnancy	12
PID/Ectopic pregnancy	9	Ectopic Pregnancy	3
Vesicular Mole	8	Complete Mole Partial Mole USG Inconclusive	4 3 1

Clinically in 52 patients the bleeding was thought to be due to threatened abortion USG helped to diagnose non – viable

Table III

Prognostic Factors	Total No.	Pregnancy Continued	Aborted Evacuated
Gestational Sac 25 mm by TAS and 16mm by TVS Embryo : Present	20	0	20 *
: Absent	12	0	12**
GIS. 20 mm by TAS 8 mm by TVS Yolk sac + nt			
- nt	5	3	2
Cardiac Pulsation	16	0	16
Sub chorionic haematioma			
MSD –CRL< 5 mm	19	15	4
Irregular G. sac	6	1	5
Low implantation	2	0	2
	19	0	19
	1	1	0

* All cases had absent cardiac pulsation. ** Blighted ovum.

Table – IV Details of bad obstetric history

History	Number
Previews Abortion	10
Previous still birth	4
Previous neonatal	3
After term labour	1
Preterm labour	2
Previous congenital malformation	3

Out of 100 patient examined 20 patients came with bad obstetric history.

Table – V Duration of pregnancy in weeks at the USG Examination.

Weeks	Number
Early pregnancy upto 6 weeks	5
6-8 weeks	36
8-12 weeks	59

59% of cases were of 8-12 weeks of pregnancy and 36% were 6-8 weeks pregnancy, when first underwent USG.

Table – VI -Sonographic Finding in ectopic Pregnancy.

Sonographic Findings	No. of patients	Percentage
Adenexa		
Complete adenexal mass	17	80.9%
Adenexal G.sac	5	23.8%
Fetal pole in adenexa	2	9.5%
Adenexal live embryo	1	4.7%
Normal adenexa	1	4.7%
Uterus		
Normal	17	80.9%
Thickened Endometrium	1	4.7%
Pseudo sac	1	4.7%
Enlarged uterus	2	9.5%
Fluid		
Cul-de sac Fluid	11	52.3%
Intra abdominal fluid	7	33.3%
Echogenic fluid	2	9.5%

Table – VII Comparison of USG results with final diagnosis in patients with first trimester vaginal bleeding.

USG Results	Vesic cular Mole	Threatened Abortion	Incomplete Abortion	Missed Abortion Blighted Ovum	Ectopic pregnancy	Total
Definitive Diagnosis	16	19	3	**36**	**15**	**89**
Increased Confidence	2	0	0	**3**	**6**	**11**

Ultrasound diagnosis correlated accurately with final clinical outcome in 89% patients.
In 11% it helped in diagnosis and subsequent management though findings were only suggestive but not diagnostic.

Table – VIII Influence on patient Management

1.	Allowed early termination of pregnancy	40
2.	Helped in continuation of pregnancy	20
3.	Helped in giving correct line of treatment	29
4.	Allowed more accurate diagnosis	11
Total		100

DISCUSSION

Maximum patients found were from age group of 21 to 24 years and between 8-12 weeks of pregnancy 36 patients were between 6-8 weeks gestation and five were below six weeks.

Abortion constituted the single largest group of 71%, 19% were threatened abortion with successful outcome of 79%.

Mantoni et al (1985) reported 87% successful outcome in threatened abortion who had foetal cardiac activity. Nyberg et al (1986) found that an irregular gestational sac is associated with abnormal outcome in 100% of cases. Similar results were found in our study.

Nagy et al. evaluated the long-term clinical significance of intrauterine hematomas detected in the first trimester of pregnancy in a general obstetric population, where the incidence was 3.1% . Retroplacental hematomas were significantly correlated with an increased risk for adverse maternal and neonatal complications. Their results also indicated that the presence of an intrauterine hematoma during the first trimester may identify a population of patients at an increased risk for adverse pregnancy outcomes. There were 6 cases in our study who had large chorionic haematoma, five of whom aborted. Trans-vaginal was more sensitive to transabdominal sonography. Yolk sac was visualized in 44% cases by TVS, none by TAS, cardiac activity was visualized in 9 cases compared to 3 cases by TAS [Pennell et al (1987)] reported that cardiac activity was seen in 8 cases by TAS yolk sac more clearly & more often when these structure were not apparent in TAS.

Threatened miscarriage—vaginal bleeding before 20 gestational weeks—is the commonest complication in pregnancy, occurring in about a fifth of cases. Miscarriage is 2.6 times more likely and 17% of cases are expected to present with complications later in pregnancy (Alexandros Sotiriadis et al 2004). Our study showed only one case. The recent improvements in sonography with endovaginal probes have allowed better visualization of

pelvic structures and consequently an increase in diagnostic accuracy and in active management of ectopic pregnancy under sonar guidance. USG findings in ectopic pregnancy may be diagnostic or suggestive.

The various findings seen in ectopic pregnancy are ectopic gestational sac, thickened endometrium and cul-de sac fluid.

Presence of ectopic gestational sac or ectopic embryo is diagnostic of ectopic pregnancy.

Diagnostic findings of extra uterine gestational sac with or without foetus were seen in 23% of our cases. [Satable et al (1990)] reported sonographic findings diagnostic of ectopic pregnancy in 22% of cases by transabdominal sonography and 38% of cases transvaginal sonography.

In the present study 9 cases, trans vaginal sonography was diagnostic of ectopic in 4 cases and trans abdominal in 2 cases. Adexenal sac was visualized with greater accuracy using TVS. [kivikoski et al (1990)] found adenexal findings highly suspicious of ectopic pregnancy in 68% cases by TAS and in 84% of cases by TVS.

Thickened endometrium / Pseudo sac was seen in 9.5 % of cases in the present study with is comparable to 9% reported by [E. moaschos et al (2001)]. Free fluid in cul-de-sac was seen in 52% of cases in present study. [Nyberg et al (1990)] reported similar findings in 63% of their patients [Fleisher et al (1990)] reported echogenic free fluid in 26% of their cases by trans vaginal sonography which is superior to trans abdominal sonography in detecting free fluid.

Sonography remains the most important non invasive diagnostic tool in molar pregnancy. Recent paper by Sebire et.al. (2008), a sonographic diagnosis of **missed abortion or anembryonic pregnancy** with no documented sonographic suspicion of molar pregnancy was identified in 67% of cases. This highlights the importance of complete histopathological analysis of the products of conception to exclude gestational trophoblastic disease. In our study 17% had partial moles.

In our series of 18 patients with molar pregnancy USG diagnosis of partial mole was made in 3 patients (16%). In all the 3 cases normal placental tissues along with vesicleswas documented at the time of curettage. However even with latest equipment early cases of partial mole may be confused with missed abortion .

SUMMARY AND CONCLUSIONS

1. One hundred cases of Obstetrics from Index medical college and research centre's O.P.D with first trimester bleeding were evaluated.
2. The incidence of bleeding in first trimester was 16.5%.
3. Maximum no. of patients were from the age group 21-25 years.
4. Patients in whom USG was indicated, 20 patients had bad obstetric history in the form of previous abortion, previous still births and neonatal death.
5. Ultrasound diagnosis correlated accurately with final clinical outcome in 89% patients.
6. In 11% it helped in clinical diagnosis and subsequent management though findings were only suggestive but not diagnostic.
7. USG helped in better management of cases.
    a. In 41 patients it helped in early termination of pregnancy.
    b. In 20 patients it helped in continuation of pregnancy.
    c. In 29 patients it helped in giving correct line of treatment.

Ultrasonographic evaluation is a sensitive investigation which helps in early diagnosis of causes for vaginal bleeding in first trimester of pregnancy. Major morbidity or mortality can

be prevented by early surgical intervention. In addition duration of hospital stay and hospital costs are reduced. Ultrasonography should be done in all patients with vaginal bleeding during first trimester of pregnancy. Transvaginal sonography is more sensitive than transabdominal sonography therefore transvaginal sonography should be done in all cases, when tranabdominal sonography is inconclusive. Ultrasound is the only imaging modality today by which an accurate assessment of first trimester bleeding can be done from diagnostic and prognostic point of view.

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