Original Article

Study of early pregnancy loss using Ultrasonography

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Abstract

Background: Vaginal bleeding is the most common cause of presentation to emergency department in the first trimester. **Objectives:** The objectives of the study were to review the value of ultrasound in assessing the vaginal bleeding and early pregnancy loss and to find out any related abnormalities. **Design:** This is community-based study. It was carried out in Khartoum State, Major teaching hospitals, during the period from July 2010 to October 2013. **Materials and Methods:** The sample of the study was 302 female patients, who referred to ultrasound departments for obstetric scanning, their ages ranged between 15 and 50 years, their mean age was 25.3 years old. Ultrasound machines with 3.5, 5 MHz convex and endovaginal probe were used. The type of abortion was correlated with socioeconomic, sac localization and shape, cervix and adenexea characters as well as the presence of fetal congenital abnormalities. **Results:** The abortion types were characterized as incomplete, missed, threatened, complete, blighted ovum, inevitable, septic, recurrent, ectopic and molar as: 29.47%, 16.88%, 12.58%, 7.94%, 5.62%, 19.02%, 1.83%, 4.3%, 1.98%, and 0.66% respectively and showed highly significant relations with: -low socioeconomic status, Intra gestational sac location and shape, fetal congenital abnormalities, competent cervix and abnormal Adnexa. **Conclusion:** Ultrasound provided unique information about vaginal bleeding causes and outcomes and is useful in the detection of early pregnancy complications.

Key words: First trimester, pregnancy loss, vaginal bleeding

INTRODUCTION

Vaginal bleeding is a common incident during pregnancy. The incidence varies, ranging from 1% to 22%.[1-3] The source of bleeding is mostly maternal. The significance, initial diagnosis, and clinical approach to vaginal bleeding depend on the gestational age and the bleeding characteristics. Vaginal bleeding during early pregnancy is associated with a 1.6-fold increased risk of many adverse outcomes; including preterm labor and preterm premature rupture of membranes.[3] As bleeding continue later in pregnancy, the risk of associated morbidities grows.[4] Even though 50% of the women who endure from vaginal bleeding during early pregnancy go on to have a normal pregnancy,[3] vaginal bleeding in the second half of pregnancy is linked to perinatal mortality, disorders of the amniotic fluid, premature rupture of membranes, preterm deliveries, low birth weight, and low neonatal Apgar scores.[1] In this study, we reviewed the general clinical approach to pregnancy-related bleeding. The approach is mainly based on the time of bleeding, including the first half of the pregnancy. To the best of our knowledge, no similar studies were done for Sudanese ladies in the open literature regarding that issue, so this study was carried out in order to review the value of ultrasound in assessing the vaginal bleeding and early pregnancy loss and to find out any related abnormalities for Sudanese pregnancies.

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MATERIALS AND METHODS

This was cross–sectional study, carried out in Southern Khartoum State, at Ibraheim Malik Teaching Hospital,and Bashier Teaching Hospital – Ultrasound Departments.

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Ultrasound machines used were – AlokA SSD-500, SDR 155 OXP, and FUKUDA DENSHI, with 3.5 and 5 MHz convex Transabdominal prob and endo-vaginal probe with Doppler capabilities. This study was conducted during the period from June 2010 up to October 2013.

Study sample size

Three hundred and two consecutive women ages arranged between 15 and 50 years who presented with vaginal bleeding before 20 weeks' gestation referred to ultrasound departments for obstetric examination were studied. Structured history and physical examination, symptoms and signs, were performed on each woman as initial clinical assessment. This was followed by transabdominal or transvaginal sonography to determine the status of pregnancy. The accuracy of diagnoses at different clinical stages (history, physical examination, and transvaginal sonography) relative to the final diagnosis was compared using the statically analysis (person Chi-square, *P* value, kappa coefficient). Statistical analysis of the data was performed using SPSS (Statistical Package for Social Sciences) for windows version 17.0 (SPSS, Chicago, IL, USA) identifying the incidence of normal sonographic findings and incidence of abnormal sonographic findings relationship between vaginal bleeding, age, parity, socioeconomic, contraceptive methods, HRT, and other associated diseases, like blood diseases, and endocrine disorders and environmental factors.

Methods

Procedures/techniques

Each patient was scanned twice, in an international scan guide lines and protocols, firstly by the researcher and secondly a qualified sonologists to confirm the findings of the accurate diagnosis, the sonographic parameters that have association with embryonic success or failure, include appropriate gestational sac size, gestational sac location, fetal survey for congenital anomalies, assessment of uterine cervix, adnaxe, the socioeconomic status has been studied. The sonographic findings were reported as incomplete abortion, complete abortion, missed abortion, recurrent abortion, septic abortion, ectopic pregnancy, molar pregnancy.

The patients were asked to arrive with a full bladder by drinking 20–30 ounce of water or other liquids about 1 h before the examination time. A full bladder indicates bladder distention just to point of mild patient discomfort. For endovaginal ultrasonography empty bladder was recommended. Scanning of the female pelvis begins with longitudinal and transverse surveys of the uterus and pelvic cavity following by longitudinal and transverse surveys of the ovaries.

RESULTS

The frequency distribution of the subject according to vaginal bleeding in first trimester and the differential type of abortion has represented as:- incomplete, missed, threatened, complete, blighted ovum ,inevitable, septic , recurrent, ectopic and molar as 29.47%, 16.88%, 12.58%, 7.94%, 5.62%, 19.02%, 1.83%, 4.3%, 1.98% and 0.66% respectively.

It was notified that prevalence of abortion were: <8 weeks constituting 84 (27.9%), 8–12 weeks were 152 (50.8%) and 13–20 weeks were 66 (22.08%) and the increases maximum rate was found in the gestational age between 8 and 12 weeks (50.8%).

DISCUSSION

In this community -based study, the objectives, were to review the value of ultrasound in assessing the vaginal bleeding and early pregnancy loss, and to find out any related abnormalities. The results were presented in the [Tables 1-6]. It was notified that from the total sample of the study (657 female patients in the first trimester), the females who were normally represented were 355 (54%) and females with abnormal vaginal bleeding in the first trimester were 302 (46%), their ages were between 15-50 years old, their mean age was 27 years old, all were scanned sonographically, and their pregnancies were ended by miscarriage, similar results was obtained by;[5] approximately 30% of all pregnancies end in miscarriage and about 80% occur before 12 weeks gestation.

Table 1 shows frequency distribution and x^2 test of the subjects according to the socioeconomic status. In Sudanese patients of low socioeconomic status, missed abortion constituted 11.25% out of 16.88%, recurrent abortions were 3.64 % out of 4.3%, blighted ovum were 4.5% out of 5.6%, threatened abortions were 8.60% out of 12.58% and incomplete abortions constituted 16.88 % out of 29.47%. The statistical analyses of the above results showed highly significances in missed abortion 11.26%, recurrent abortion 4.30% and blighted ovum results. When compared to other similar results; the influence of socioeconomic status on stillbirth risk in Sweden study[6] showed that low socioeconomic status is generally associated with increased risk of stillbirth, but the mechanisms have rarely been investigated. Our aim was to study the association between low socioeconomic status and risk of still birth, it was noticed that Sudanese maternal socio-demographic characteristics and lifestyle as they were hard workers, heavy weight carrier, and negligence of attending at antenatal care departments were found to be the cause of their abortions.

Table 1: Frequency distribution and x² test of the subject according to the socioeconomic status

Type of abortion	Socioeconomic status						Total		χ^2	*P*
	Low		Medium		High					
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Threatened	26	8.6	8	2.6	4	1.3	38	12.6		
Inevitable	39	12.9	11	3.6	8	2.6	58	19.0		
Complete	17	5.6	5	1.6	2	0.7	24	7.9		
Incomplete	51	16.9	24	7.9	14	4.6	89	29.5		*
Missed	34	11.3	16	5.3	1	0.3	51	16.9		0.0001**
Blighted ovum	13	4.3	4	1.3	0	0	17	5.6		0.0001**
Recurrent	11	3.6	2	0.7	0	0	13	4.3		0.0001**
Septic	3	0.9	1	0.3	0	0	4	1.32		0.0579 ns
Ectopic	4	1.3	1	0.3	1	0.33	6	1.98		
Molar	2	0.7	0		0		2	0.66		
Total	200		72		30		302	100		

*Significant, **Highly significant. n.s: Not significant. The above table shows the frequency distribution and x² test of the subjects according to the socioeconomic status. In patients of low socioeconomic status, missed abortion constituted 11.25% out of 16.88%, recurrent abortion 3.64 %out of 4.3%, blighted ovum 4.5% out of 5.6%, threatened abortion 8.60% out of 12.58% and incomplete abortion 16.88 % out of 29.47%

Reports found that the area surrounding the landfill site, where the socio economic status is low has an increased rate of reported congenital malformations[7], which predated the opening of the landfill; most of our sample was from similar environment in Sudan. Further studies of the reproductive risk in such communities are needed to be examined. Table 6 shows frequency distribution and x² test of the subjects according to the gestational sac localization internal or external uterus.

The above results showed highly significant *P* = 0.0001 with intra gestational sac localization with incomplete abortions were 29.13%, missed abortions were 16 88.%, threatened abortions constituted 12.58%, and blighted ovum were 5.29%. Implantation usually occurs in the fundal region of the uterus between day 20 and 23 at that point the entire conceptus measures approximately 0.1 mm in diameter and cannot be imaged by transabdominal or endovaginal techniques.

The study by Nyberg *et al*.[8] demonstrated gestational sacs in 36/36 patients with normal intrauterine pregnancies with serum β-h CG levels greater than 1800 mIU/M. In subsequent article; endovaginal sonographic findings correctly identified intrauterine gestational sacs in 20% of patients with β-h CG levels below 500 mIU/ML, 4 of 5 with β-h CG levels between 500 and 1000 mIU/ML, and all 17 with β-h CG levels greater than 1000 mIU/ML.

Table 2 shows frequency distribution and x² test of the subjects according to the shape of the gestational sac. The results showed a significant relationship with: Threatened abortion constituted 10.32% out of 12.58%, blighted ovum were 2.31% out of 5.6%, Irregular shape missed abortions were 9.93% and inevitable abortions were 10.26% and distortion shape incomplete abortions constituted 13.83%.

As compared to other similar results obtained from the study done by Nyberg, *et al* [8] about threatened abortion ,and its correlation with the sonographic feature of normal and abnormal gestation sacs ,which can be an attempt to determine whether sonographic evaluation can distinguish normal from abnormal gestation sacs, in threatened abortion, gestation sacs were judged to be abnormal on the basis of specific sonographic criteria including large size (≤25 mm mean sac diameter) without an embryo; distorted shape; thin (≥2 mm), weakly echogenic, or irregular choriodecidual reaction; absence of a double decidual sac; and low position. Two criteria - large sac and distorted shape had 100% specificity and were called major criteria. The remaining criteria were individually less specific, although 100% specificity was achieved when three or more of these minor criteria were demonstrated. When one major or three minor criteria were present, 53% of abnormal gestations were correctly identified without any false-positive diagnoses; their study concluded that ultrasonography can identify many abnormal gestation sacs on a single examination.

Table 3 shows frequency distribution and x² test of the subjects according to yolk sac size and showed significant relationship at *P* = (0.0001) with threatened abortion ,incomplete abortion and inevitable abortion.

It has been hypothesized that abnormal Sonographic findings related to the size, shape and internal structure of a yolk sac can be used to predict gestational outcome.[9-13] It has been well established that an abnormally large yolk sac correlates with early pregnancy failure.[13] On the

Table 2: Frequency distribution and x^2 test of the subject according to the shape of gestational sac

Type of abortion	Shape of gestational sac						Not detected		Total		χ^2	*P*
	Round		Irregular		Distortion							
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Threatened	33	10.3	4	1.3	1	0.3	0	0	38	12.6		0.0017*
Inevitable	17	5.6	31	10.3	10	3.3	0	0	58	19.0		0.0056*
Complete	0	0	0	0	0	0.0	0	0	0	0	0	0
Incomplete	2	0.7	39	12.3	48	13.8	0	0	89	29.5		0.0014*
Missed	3	09	30	9.9	18	5.9	0	0	51	16.9		0.0013*
Blighted ovum	7	2.3	6	1.9	4	1.3	0	0	17	5.6		0.0041*
Recurrent	0	0	0	0	13	4.3	0	0	13	4.3	0	0
Septic	0	0	1	0.3	3	0.9	0	0	4	1.3		0.0579 ns
Not detected	0	0	0	0	0	0	24		24	11.9	0	0
Ectopic	0	0	0	0	6	1.9	0	0	6	1.9		
Molar	0	0	0	0	0	0	2	0.7	0	0.7		
Total	62		111		103		26					

*Significant, **Highly significant. n.s: Not significant. The above table shows the frequency distribution and x^2 test of the subject according to the shape of gestational sac, threatened abortion 10.32% out of 12.58% and blighted ovum 2.31% out of 5.62%. Irregular shape missed abortion 9.93% out of 16.88% and inevitable abortion 10.26% out of 19.02%. Distortion shape incomplete abortion 13.83% out of 29.47%

other hand, studies focusing on the shape or internal structure of the yolk sac have yielded conflicting results. Some studies suggest that irregular yolk sac shape and echogenic yolk sac can be associated with fetal death or abnormalities.[14]

Lindsay *et al*.[10] reviewed the normal and abnormal appearances of the yolk sac in pregnancies between 5 and 10 weeks of menstrual age, non visualization of the yolk sac by US in patients with mid sagittal diameter (MSD) of greater than 8 mm is abnormal. Non visualization of the yolk sac in the presence of an embryo demonstrated by US has been associated with embryonic demise in 100% of patients, either at the time of the examination or on follow up sonographic assessment. Lindsay *et al*.[15] also compared yolk sac internal diameter to menstrual age. A yolk sac diameter that is outside the 95% confidence limits for these parameters is a relative indicator of increased risk of embryonic demise or fetal abnormality. The sensitivity of yolk sac size as a predictor of outcome is, however, only 15.6%, because many abnormal pregnancies have a sonographically normal yolk sac. Although the 5% and 95% confidence limits can be used to predict increased risk, a yolk sac diameter greater than 5.6 mm between 5 and 10 weeks is always associated with an abnormal outcome. Furthermore, a thick symmetric yolk sac has a predictive value of 53.8% for abnormal out come. Yolk sac asymmetry, crenation, or flattening is also predictive of an abnormal out come.

Table 7 shows frequency distribution and x^2 test of the subjects according to the fetal congenital abnormality. The results were highly significant with incomplete abortion, missed abortion, inevitable abortion, threatened abortion and blighted ovum respectively. Compared to other similar results obtained from the study done by Clarke[16] in a prospective survey, studied the spontaneous abortion and fetal abnormality in preceding pregnancy, neural tube defects and other congenital abnormalities. There were a highly significant increased number of congenital abnormalities in the women whose preceding pregnancy had resulted in a spontaneous abortion. This may possibly be explained by the trophoblastic "rest" hypothesis and suggests that spontaneous abortions are more relevant to congenital abnormalities than has been thought.

Table 4 shows frequency distribution and x^2 test of subjects according to the cervix competency. The results showed significant relationship at $P = (0.001)$ with competent cervix threatened abortion and missed abortion. Incompetent cervix with incomplete abortion. Competent cervix with missed abortion had highly significant relationship at $P = (0.0001)$ competent with threatened abortion, and incompetent with incomplete abortion, $x^2 = 17.549$ and 21.625 respectively.

Table 3: Frequency distribution and x² test of the subjects according to the yolk sac size

Type of abortion	Yolk sac size				Not detected		Total		χ^2	*P*
	Normal		Abnormal							
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Threatened	7	2.31	31	10.26	0	0	38	12.58	13.67	0.0016*
Inevitable	0	0	58	19.02	0	0	58	19.02	6.009	0.0037*
Complete	0	0	0	0	0	0	0	0	0	0
Incomplete	5	1.65	84	27.81	0	0	89	29.47	12.63	0.0018*
Missed	0	0	51	16.88	0	0	51	16.88	0	0
Blighted ovum	0	0	17	5.62	0	0	17	5.62	0	0
Recurrent	0	0	13	4.30	0	0	13	4.3	0	0
Septic	0	0	4	1.32	0	0	4	1.32	0	0
Ectopic	0	0	6	1.98	0	0	6	1.98		
Molar	0	0	0	0	2	0	2	0.66		
Not detected	0	0	0	0	24	7.94	26	8.60	0	0
Total	12	3.97	264	87.41	26	8.60	302	100		

*Significant,** Highly significant, n.s = Not significant, The above table shows the frequency distribution and x² test of the subjects according to the yolk sac size, missed abortion 16.88% out of 16.88%, threatened abortion 10.26% out of 12.58%, incomplete abortion 27.81 % out of 29.47% and inevitable abortion total number of frequency 19.20.%

Table 4: Frequency distribution and x² test of the subject according to the cervix competent or incompetent

Type of abortion	Cervix				Total		χ^2	*P*
	Competent		Incompetent					
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Threatened	37	12.3	1	0.3	38	12.6	17.5	0.0001**
Inevitable	0	0	58	19.0	58	19.0	0	0
Complete	1	0.3	23	7.6	24	7.9	0	0
Incomplete	1	0.3	88	29.1	89	29.5	21.6	0.0001**
Missed	48	15.9	3	0.9	51	16.9	13.8	0.0012*
B lighted ovum	0	0	17	5.6	17	5.6	0	0
Recurrent	0	0	13	4.3	13	4.3	0	0
Septic	1	0.3	3	0.9	4	1.3	2.5	0.0579 n.s
Ectopic	6	1.9	0	0	6	1.9		
Molar	2	0.6	0	0	2	0.7		
Total	96		206		302	100		

*Significant, **Highly significant. n.s: Not significant. The above table shows the frequency distribution according to the to the cervix competent or incompetent, competent cervix threatened abortion 12.25% out of 12.58% and missed abortion 15.89% out of 16.88%. Incompetent cervix, incomplete abortion 29.13% out of 29.47% respectively, The statistical analysis of the result shows highly significant in competent cervix in threatened abortion 12.25% and incompetent cervix incomplete abortion29.1.3%

Table 5: Frequency distribution and x² test of the subject according to the adnexa

Type of abortion	Adnexa				Total		χ^2	*P*
	Normal		Pathology					
	Percentage	Percentage	Percentage	Percentage	Percentage	Percentage		
Threatened	1	0.3	37	12.3	38	12.6	11.0	0.0011*
Inevitable	1	0.3	57	18.9	58	19.0	8.2	0.0032*
Complete	0	0	24	7.9	24	7.9	0	0
Incomplete	17	5.6	72	23.8	89	29.7	14.7	0.0010*
Missed	7	2.3	44	14.6	51	16.9	13.9	0.0012*
Blighted ovum	1	0.3	16	5.3	17	5.6	9.5	0.0029*
Recurrent	1	0.3	12	3.9	13	4.3	1.1	0.0851 ns
Septic	2	0.7	2	0.6	4	1.3	2.5	0.0579 ns
Ectopic	0	0	6	1.9	6	1.9		
Molar	0	0	2	0.6	2	0.6		
Total	30		272		302	100		

*Significant, **Highly significant. n.s: Not significant. The above table shows the frequency distribution and x² test of the subjects according to the adnexa normal or with pathology, incomplete abortion 23.84% out of 29.47%, missed abortion 14.56% out 16.88%, threatened abortion 12.25 % out of 12.58%, blighted ovum5.29 % out of 5.62% and inevitable abortion 18. 87% out of 19.02% respectively, The statistically analysis of the above result shows significant in incomplete abortion 23.84%, missed abortion 14.56%, threatened abortion 12.25 %, blighted ovum 5.29 % and inevitable abortion 18. 87%

Table 6: Frequency distribution and x^2 test of the subject according to the gestational sac localization

Type of abortion	Gestational sac localization				Not detected		Total		χ^2	*P*
	Intra		Extra							
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Threatened	38	12.6	0	0	0	0	38	12.6	15.0	0.0001**
Inevitable	58	19.2	0	0	0	0	58	19.2	0	0
Complete	0	0	0	0	0	0	0	0	0	0
Incomplete	88	29.1	1	0.3	0	0	89	29.5	1	0.0001**
Missed	51	16.7	0	0	0	0	51	16.9	1	0.0001**
Blighted ovum	16	5.3	1	0.3	0	0	17	5.6		0.0001**
Recurrent	13	4.3	0	0	0	0	13	4.3	0	0
Septic	4	1.3	0	0	0	0	4	1.3	2.5	0.0579 ns
Ectopic	0		6	1.9	0	0	6	1.9		
Molar	0	0	0	0	2	0	2	0.6		
Not detected	0	0	0	0	24		24		0	0
Total	268		8		26		302	100		

*Significant, **Highly significant. n.s: Not significant. The above table shows the frequency distribution and x² test of the subjects according to the gestational sac localization intra or extra the uterus. The result shows incomplete abortion 29.13% out of 29.47%, missed abortion total number of frequency16.66% blighted ovum 5.29% out of 5.6%, and threatened abortion total number of frequency 12.58% respectively. The above result shows highly significant with incomplete abortion 29.13% missed abortion 16. 88%, threatened abortion as 12.58% and blighted ovum 5.29%

Table 7: Frequency distribution and x^2 test of the subject according to the fetal congenital abnormality

Type of abortion	Fetal congenital abnormality				Not detected		Total		χ^2	*P*
	Normal		Abnormal							
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage		
Threatened	12	3.9	26	8.6	0	0	38	12.6	13.5	0.0017*
Inevitable	12	3.9	46	15.2	0	0	58	19.02	9.6	0.0014*
Complete	0	0	0	0	0	0	0	0	0	0
Incomplete	25	8.2	64	21.2	0	0	89	29.5	19.8	0.0001**
Missed	12	3.9	39	12.9	0	0	51	16.9	17.5	0.0001**
Blighted ovum	0	0	17	5.6	0	0	17	5.6	9.6	0.0043*
Recurrent	0	0	13	4.3	0	0	13	4.3	0	0
Septic	1	0.3	3	0.9	0	0	4	1.3	0	0
Not detected	0	0	0	0	24	7.94	24	7.9	0	0
Ectopic	6	0	0	0	0	0	6	1.9		
Molar	0	0	2	066	0	0	2	0.6		
Total	68	22.5	210	69.53	24	8.60	302	100		

*Significant, **Highly significant. n.s: Not significant. The above table shows the frequency distribution and x² test of the subjects according to the fetal congenital abnormality, incomplete abortion 21.19% out of 29.47%, missed abortion 12.91% out of 16.88%, inevitable abortion 15.23% out of 19.02%, threatened abortion 8.6% out of 12.58%, and blighted ovum total number of frequency 5.6% respectively

In Wilcox's series[17] the mean gestational age for recognized pregnancy loss was approximately 11 weeks of menstrual age. In patients who present with closed cervical os and uterine bleeding in the first trimester, 50% were aborted. Studies found in all citations: In the journal Ultrasound in Obstetrics Gynecology had mentioned the clinical significance of early (<20 weeks) vs. late (20-24 weeks) detection of sonographic short cervix in asymptomatic women in the mid-trimester. they showed that Asymptomatic women with a sonographic cervical length of ≤15 mm diagnosed before 20 weeks of gestation have a dramatic and significantly higher risk of early preterm delivery than women diagnosed at 20-24 weeks. These findings can be helpful to physicians in counseling these patients, and may suggest different mechanisms of disease leading to a sonographic short cervix before or after 20 weeks of gestation.

Table 5 shows frequency distribution and x^2 test of subjects according to adnexa (normal or with pathology). Incomplete abortions were 23.84 out of 29.47%, missed abortions were 14.56% out 16.88%, threatened abortions constituted 12.25 % out of 12.58%, blighted ovum were 5.29 % out of 5.62% and inevitable abortions were 18. 87% out of 19.02% respectively. In other similar results obtained from the study by Schwartz and Di Pietro only 9% of patients with clinically suspected ectopic pregnancy actually had an ectopic pregnancy, 17% symptomatic ovarian cysts, 13% had pelvic inflammatory, 8% had dysfunctional uterine bleeding, and 7% had spontaneous abortion. These data demonstrate that

the clinical presentation is by no means specific. Threatened abortion (11% out of 12.84 %), missed abortion (12.38% out of 18.34%) and inevitable abortion (4.12 % out of 5.04%), x^2= 10.953, 13.568 and 9.711 respectively. There was a highly significant relationship with symptomatic clinical features at *P* = (0.0001), with incomplete abortion (39.91% out of 40.82%) complete abortion (10.55% out of 11.92%) and blighted ovum (6.88% out of 7.79%), x^2 = 20. 315, 18.967 and 18.265 respectively.

CONCLUSIONS AND RECOMMENDATIONS

Vaginal bleeding is a common complaint in the emergency department and it is responsible for the maximum number of pregnancy wastage. Our study is a community-based study carried out to find out incidence and prevalence of vaginal bleeding before 20 weeks of gestational.

The results showed that the most common of cases abortion occurred in Sudanese ladies, were the age group between 31 and 35 years. Commonest type of abortion, is incomplete abortion (29.47%)and occurs at gestational age <8 weeks(27.9%). The results were highly significant with: Low socioeconomic status, missed abortion (11.25% out of 16.88%), blighted ovum (4.5% out of 5.6%) and recurrent abortion (3.6% out of 4.3%) respectively. Ultrasonography is more efficient to detect first trimester bleeding and failure of pregnancy and can characterize the shape of Gestational Sac and yolk sac as well as the correlation pregnancy failure. Ultrasonography had an important role in assessing incomplete abortion by detecting intra uterine retained product; theirfore it affect the management of pregnancy. Ultrasonography provided unique information about vaginal bleeding causes and outcome which is useful in the detection of early pregnancy complications.

Surveillance of high risk fetuses with ultrasonography, could result in reduction in fetal mortality and morbidity rates in women with bleeding, and that is achieved, by early diagnosis. Patients should undergo regular ultrasonographic assessment, with a view to take early management measures as needed, in order to minimize pregnancy complications.

Establishing early pregnancy maternal and prenatal health care units and centers in Sudan is recommended with improvement in communication strategies regarding prenatal health and intensifying medical education to the general population and particularly to Sudanese pregnant ladies.

Further researches are needed; to systemically study bleeding in mid to late pregnancy in 2nd and 3rd trimester with same details, will give reliable results. Urgent need for continuous education program and training for all sonologists, sonographers, and other health-care professionals should be provided.

REFERENCES

1. Shevell T, Malone FD. Management of obstetric hemorrhage. Semin Perinatol 2003;27:86-104.
2. Ronsmans C, Graham WJ, Lancet Maternal Survival Series steering group. Maternal mortality: Who, when, where, and why. Lancet 2006;368:1189-200.
3. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: A systematic review. Lancet 2006;367:1066-74.
4. Confidential Enquiry into Maternal and Child Health (CEMACH). Saving mothers' lives reviewing maternal deaths to make motherhood safer – 2003-2005. In: Lewis G, editor. The Seventh Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. London: CEMACH; 2007.
5. Everett C. Incidence and outcome of bleeding before the 20th week of pregnancy: Prospective study from general practice. BMJ 1997;315:32-4.
6. Son OS, Dickman PW, Johnsoon AL, Canllingius S. The influence of socio economic status on still birth risk in Sweden. Int J Epidemiol 2001;30:1296-301.
7. Gouveia N, Prado RR. Health risks in areas close to urban solid waste landfill sites. Rev Saude Publica 2010;44:859-66.
8. Nyberg DA, Filly RA, Filho DL, Laing FC, Mahony BS. Abnormal pregnancy: Early diagnosis by US and serum chorionic gonadotropin levels. Radiology 1986;158:393-6.
9. Küçük T, Duru NK, Yenen MC, Dede M, Ergün A, Baser I. Yolk sac size and shape as predictors of poor pregnancy outcome. J Perinat Med 1999;27:316-20.
10. Lindsay DJ, Lovett IS, Lyons EA, Levi CS, Zheng XH, Holt SC, *et al*. Yolk sac diameter and shape at endovaginal US: Predictors of pregnancy outcome in the first trimester. Radiology 1992;183:115-8.
11. Cho FN, Chen SN, Tai MH, Yang TL. The quality and size of yolk sac in early pregnancy loss. Aust N Z J Obstet Gynaecol 2006;46:413-8.
12. Berdahl DM, Blaine J, Van Voorhis B, Dokras A. Detection of enlarged yolk sac on early ultrasound is associated with adverse pregnancy outcomes. Fertil Steril 2010;94:1535-7.
13. Bae S, Karnitis J. Triple ultrasound markers including fetal cardiac activity are related to miscarriage risk. Fertil Steril 2011;96:1145-8.
14. Schmidt P, Hörmansdörfer C, Bosselmann S, Elsässer M, Scharf A. Is the yolk sac a new marker for chromosomal abnormalities in early pregnancy? Arch Gynecol Obstet 2011;283 Suppl 1:23-6.
15. Gardiner A, Clarke C, Cowen J, Finn R, McKendrick O. Spontaneous abortion and fetal abnormality in subsequent pregnancy. Br Med J 1978;1:1016-8.
16. Wilcox AJ, Weinberg CR, O'Connor JF, Baird DD, Schlatterer JP, Canfield RE, *et al*. Incidence of early loss of pregnancy. N Engl J Med 1988;319:189-94.
17. Schwartz RO, Di Pietro DL. Beta-hCG as a diagnostic aid for suspected ectopic pregnancy. Obstet Gynecol 1980;56:197-203.

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