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Evaluation of First Trimester Miscarriage among Sudanese Woman in Khartoum State Using Ultrasonography

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Abstract

Background: Miscarriage is that the commonest complication of early pregnancy. In recent years, there has been a trend towards more conservative management for women with first trimester miscarriage. Most miscarriages are due to uterine malformations or chromosomal abnormalities, which account for the majority that occur within 10 weeks of gestation. Ultrasonography is that the most popular modality to verify the presence of a viable intrauterine gestation. In some instances, creating an identification of early pregnancy loss is simple and requires restricted testing or imaging.

Purpose: The purpose of this study was to evaluate the first trimester miscarriage among Sudanese women in Khartoum state using ultrasonography.

Methods: Descriptive prospective across sectional study conducted in Khartoum state hospitals during period from June 2017 to June 2018 using ultrasound. Out of 100 patients whom in the first trimester and accomplishing the exclusion and inclusion criteria included in the study.

Results: The results of the study shows that the mean age of pregnant women was 26 ± 30 years majority of them between (26-30) years old. 58% of abortion occur in homemakers occupations groups. Incomplete and complete miscarriage are the most common (34%) and the most common cause of miscarriage was unexplained (80%), trauma (12%), uterine defect (4%), fibroid (2%), febrile diseases (2%).

Conclusion: The study concluded that most common type of miscarriage found at Khartoum is incomplete and complete miscarriage. Ultrasound characterized various kinds of miscarriage.

Keywords: Miscarriage; First trimester; Ultrasonography

Introduction

Miscarriage is the most common complication of early pregnancy mischarge. or spontaneous abortion, is generally define as the spontaneous loss pregnancy 30% to 40% of all conceptions result in mischarge, 10% to 15%of clinically recognized pregnancies end in first trimester and early second trimester losses (less than 20 weeks gestational age). However, in the UK the cut-off gestation defining a miscarriage is 24 weeks since the start of the last menstrual period (LMP). Nearly 80% of sporadic loss occur in first trimester and manifest before 12 weeks GA [1,2].

In recent years, there has been a trend towards more conservative management for women with first trimester miscarriage. The majority of women presenting with a miscarriage can be offered expectant management with a reasonable prospect of success and with no increase in the complication rate. Approximately 90% of incomplete miscarriages and 50% of missed miscarriages and an embryonic pregnancy can be expected to miscarry within 2 weeks. The odds of a woman completing her miscarriage with each subsequent week diminish with time. Women can be given an indication of the likelihood of them completing their miscarriage within a 2-week period based on the initial ultrasound diagnosis [3].

Most miscarriages are due to uterine malformations or chromosomal abnormalities, which account for the majority that occur within 10 weeks of gestation. Other less common causes include uterine abnormalities, maternal infection, alcohol, smoking, immunologic and genetic defects (16) in some cases, the ovum never develops (an embryonic gestation).

In most early miscarriages, fetal death precedes clinical miscarriage, often by several weeks. Although clinical symptoms of miscarriages are most common between 8 and 12 weeks of gestation, sonographic evidence in most cases demonstrates death before 8 weeks; if fetal viability can be demonstrated by cardiac activity and a normal sonogram, the subsequent risk of fetal loss decreases significantly. However, Many threatening mischarge may be settle spontaneously and lead normal pregnancy and subsequent delivery of a normal infants [4-6].

Ultrasonography is the primary method used to locate early gestation, establish gestational age and assess fetal viability.

Transabdominal ultrasonography is most useful for identification of IUPs with fetal cardiac activity and exclusion of ectopic pregnancy, excepting patients at high risk for heterotrophic pregnancy because of infertility procedures. Trans vaginal ultrasonography is more sensitive, recognizes shows an intrauterine gestational sac with no embryonic heartbeat (and no findings of definite pregnancy failure earlier than trans abdominal ultrasonography, and is diagnostic in up to 80% of stable patients presenting in the first trimester [7,8].

Patients who have a viable fetus visualized on ultrasound examination have a much lower risk of miscarriage (3%-6%), although vaginal bleeding is a high-risk indicator, even when a viable fetus is present. Those with a history of bleeding who do not miscarry may have otherwise normal pregnancies, although they have an approximately twofold increased risk of premature birth and low-birth-weight infants [9,10].

Types of Miscarriage

Threatening: In threating mischarge vaginal bleeding is associated with cramping, the cervix remains close and pregnancy may be progress normally, ectopic pregnancy can masquerade as a threatened miscarriage in the early stages of pregnancy and should always be considered in the differential diagnosis. Even in the patient with painless vaginal bleeding, the diagnosis of ectopic pregnancy must be considered. Early ultrasonography is imperative to locate the pregnancy in the patient who has bleeding or pain [4,6].

Incomplete miscarriage

Is a pregnancy that is associated with vaginal bleeding? Dilatation of the cervical canal. In addition, the passage of some products of conception usually the cramps are intents and the vaginal bleeding is heavy. Patients may describe passage of the tissue. Alternatively, the examiner may observe evidence of tissue passage within the vagina. Ultrasound may show that some of the products of conception are still present in the uterus [11]. Incomplete abortion is diagnosed when products of conception have passed the level of the *cervical oss.* The woman often has heavy vaginal bleeding, midline cramping, and an open *cervical oss.* [12]. The sonographic appearance of incomplete miscarriage is of thick irregular echoes in the midline of the uterine cavity. The reliability of ultrasonography in the detection of complete miscarriage is high, enabling correct identification in 98% of patients with an empty uterus (complete miscarriage) and 69% of patients with retained products [13].

Complete miscarriage

Complete abortion occurs when all the gestational products have passed. This is ascertained by examination of the passed products of conception, pelvic ultrasonography to ascertain emptiness of the uterus, and at times retrospectively with falling quantitative HCG levels [11]. The diagnosis of a complete miscarriage is generally accepted as an endometrial thickness <15 mm with no evidence of retained products of conception 217 and transvaginal sonography is a sensitive tool for detecting residual trophoblastic tissue [14,15].

Missed miscarriage

Missed abortion" is a poor term still in use to describe retention of a nonviable pregnancy for longer than 4 weeks. Ultrasound scans of these women provide a more specific and usually earlier diagnosis, such as an empty sac or an embryonic gestation or fetal demise. The term-missed miscarriage is also known as early fetal demise, delayed miscarriage and silent miscarriage, terms that have replaced the traditional 'an embryonic pregnancy' and 'blighted ovum'. Essentially, the term describes either an empty gestational sac measuring greater than 20 mm in mean diameter, or a sac containing a non-viable fetus of greater than 6 mm crown–rump length (CRL) with minimal clinical symptoms [12,16].

Septic abortion

Septic abortion diagnosed when there is infection of the uterus and products of conception. This occurs most often with incomplete abortions. Fever, uterine tenderness, foul discharge and leukocytosis should aid the practitioner in making this diagnosis [12].

Abortion is one of the most commonly performed procedures in gynecological departments worldwide. The latest estimated worldwide rate for abortion in 2008 is 28 per 1000 women aged 15 to 44 years old. An estimated 6.4 million abortions occurred in Africa in 2008 [17]. Current information on the incidence of miscarriage in Sudan is not available consistently. However, some study developed to evaluate miscarriage among Sudanese one in some areas. Mahmoud Salih Abdulla stated state that the incidents of spontaneous abortion among the pregnant women in south kordufan was 10.1%.

The high frequency occurred in age 20-30 years old most of abortion cases about (44%) occurred in first trimester. The main common causes of the abortion might be heavy lifting, which account for 44% of all causes the risk of placental defect as a cause increased with maternal age. High incidence of miscarriage occurred in homemakers group (76%). Complete abortion was highly incident among the types of abortion [18]. In addition, Khalid Ahmed Mohamed stated that, the incidence of abortion in Mayo city is high. The commonest type of abortion is incomplete. He found that there was association between maternal social status and the incident of abortion [19].

This study was conducted to evaluate first trimester Miscarriage among Sudanese woman in Khartoum state.

Material and Methods

This was a prospective across sectional study conducted in Khartoum state hospitals on 100 pregnant women their age between 18-45 years old whom in first trimester to evaluate the frequency rate of types of abortion among Sudanese pregnant women during the period from June 2017 to June 2018 using ultrasound. Inclusion criteria include singleton Sudanese women whom had experiences first trimester bleeding or lower abdominal pain. Normal pregnant women and preterm birth excluded from the study. Data was collected using data collection sheet which include demographic characteristic like patient age, educational level, gestational age (calculate from last menstrual period for women whom are certain from last menstrual period).

Gestational sac diameter was measured from inner the inner borders in three orthogonal planes and considered the mean diameter .The presence of a yolk sac was documented. Embryo crown-rump length was documented, and the presence or absence of a heartbeat. Also measured the crown-rump length to the nearest millimeter the greeter length was documented. All subject of study was experienced transvaginal ultrasonography using 5-7.5 MHz frequency

All statistical calculations were done using The SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 21 for Microsoft Windows. Data was analysis in term of frequency and percentage

Results

The study shows that the mean age of patients in the study was 26 ± 30 years, the age group (26-30) years was the highest frequent (30%). the majority of pregnant women (38%) were with primary school education. (93.9%) from the pregnant patient were resident civil, and 6% from the rural.

The distribution of occupation which reflect that (86%) of the patient was a housewife. However, the number of abortion in housewife was (86%) of the study, sample and (14%) were of the worker sample (Table 1).

Variable	No	%
Patients age		
20-25	28	28
26-30	30	30
31-35	22	22
36-40	14	14
41-45	6	6
Level of education		
primary school	40	40
higher secondary	30	30
B.Sc.	28	28
M.Sc.	2	2
primary school	40	40
Patients Resident		
Rural	6	6
Civil	94	94
Patients occupation		
Housewife	86	86
Worker	14	14

Table 1: Shows the demographic characteristics of the patients (n=100).

The study shows (80%) of miscarriage was unexplained causes while the trauma, uterine defect, uterine mass, and febrile disease represent (12%), (6%), (4%), (2%) and (2%) respectively (Table 2).

Regard to miscarriage types it was observed that Complete and incomplete miscarriage represent same highest frequent (34%) for each, Missed abortion with (28%), and blighted ovum with (4%) (Table 3).

Regard to ultrasound finding the study found that there was enlarged uterus in (96%) of the patients while (4%) with normal uterus size. (36%) of the patient with an empty uterus, other (36%) with Dead embryo, (24%) viable embryo and (4%) with Complete (Table 4).

Possible cause of abortion	No	%
Un explained	80	80
Uterine defect	4	4
Febrile disease	2	2
Trauma	12	12
Uterine mass	2	2

Table 2: Shows frequency distribution of possible cause of abortion (n=100).

Type of miscarriage	No	%
Threaten	0	
Complete	34	34
Missed	28	28
Inevitable	0	0
Incomplete	34	34
Blighted ovum	4	4

Table 3: Shows frequency distribution of miscarriage types (n=100).

	No	%
Uterine size		
Normal	4	4
Enlarged	96	96
Uterine cavity contents		
Viable embryo	24	24
Complete	4	4
Empty	36	36
Dead embryo	36	36

Table 4: shows Ultrasound finding of miscarriage (n=100).

Finally, when the question for the patient about did they know that getting an abortion has side effects (56.2%) of the study sample were reply with no while (43.8) answered yes.

27% of patients were taking insulin and 73% were not. 92% of pregnant women were cigarette smoke and 8% were not. 54% of patients know that female can die from miscarriage however 46% were not (Table 5).

82% of patients agree with the statement that Abortion involves ending the life of a developing human being by several surgical and medical techniques, however, 10% strongly disagreed and 8% of the patients were undecided (Figures 1 and 2).

Answer	No	%
did you know that getting an abortion has side effects		
Yes	46	46
No	54	54
are you insulin-dependent diabetic		
Yes	27	27
No	73	73
do you smoke cigarettes		
Yes	92	92
No	8	8
do you know females can die from an abortion		
Yes	54	54
No	46	46

Table 5: Evaluation of patient's information's about miscarriage (n=100).

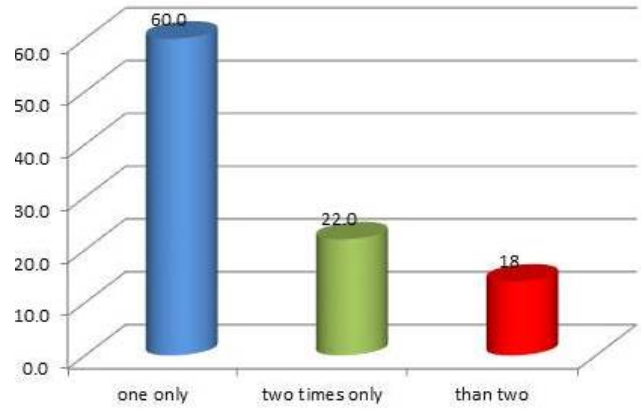

Figure 1: Shows the number of Miscarriage in pregnant women.

Discussion

Miscarriage has been still a health problem in pregnancy which caused by Many factors, ultrasound plays an important role in assessing and determine the types and causes of miscarriage. This study evaluated the sonographic findings of miscarriage. It was identified that miscarriage was most common in the age group of (20-30) years old. This finding agrees and disagrees with previous studies. Patrick and Elise studied maternal age as a risk factor for miscarriage in the European community and they reported that the risk of miscarriage was higher in women were aged ≥35 years [20]. When in Sudan Mowada Bura et al. they reported miscarriage mainly affects the maternal age group 20-30 years (62%), this was confirmed our data.

While Mowada Bura et al. detected complete miscarriage was most common. Incomplete abortion defined as retained products of conception that always appeared echogenic with irregular gestational sac (GS). However, complete abortion is defined when an ultrasound revealed an empty uterine cavity without evidence of embryonic tissue or GS. Uterine cavity has dead embryo or empty uterus; an enlarged uterus can cause infertility and lead to significant pregnancy problems, such as premature delivery and miscarriages [21].

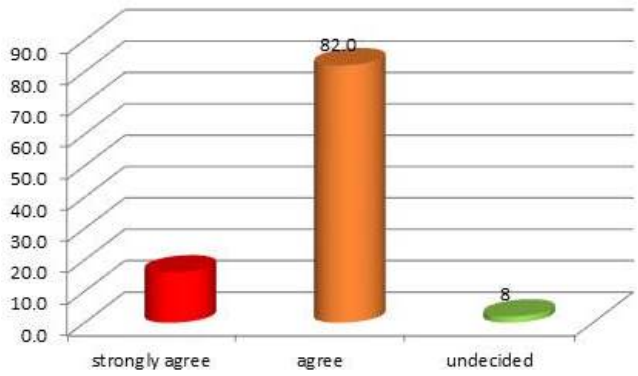

Figure 2: do you agree with this statement? "Abortion involves ending the life of a developing human being by a number of surgical and medical techniques.

The environment of the study population may play a major role in this variation. Regarding the level of education, the primary school in this study is associated with increasing of miscarriage this result agree with a study done by Alan [22] and Leong Jin Kouk et al. [21] reported the rate of the miscarriage was increased in the vocational institution and higher education.

The current study has shown civil resident was strongly associated with miscarriage more than rural in spite of the present study the incidence of miscarriage was increased among housewife women. In the current study, possible causes of abortion were unexplained, in literature, the reason for miscarriage is varied and most often, the cause cannot be identified. During the first trimester, the most common cause of miscarriage is a chromosomal abnormality.

Conclusion

Miscarriage was 30% to 40% of all conceptions, 10% to 15% of clinically recognized pregnancies end in the first trimester and early second trimester losses. The ultrasound examination plays a vital role to assess and characterize miscarriage. In the present study, ultrasound characterized various kinds of miscarriage; the complete and incomplete abortion was the most common type of abortion in the current study the most cases of miscarriage corresponded with enlarge of uterine size. Most of the women under study do not know that miscarriage-getting side effect.

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