Pattern of Sonographic findings in Patients with first trimester vaginal bleeding in a North Eastern Nigerian Hospital.

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Abstract

Background: The study was carried out to assess patterns of sonographic findings in patient with first trimester vaginal bleeding at Abubakar Tafawa Balewa University Teaching Hospital Bauchi.

Objectives: To determine the pattern and proportions of sonographic findings in patients with first trimester vaginal bleeding and correlate between the amount of per vaginal (PV) bleeding with findings and some possible variables that may be associated with the bleeding.

Methods: A retrospective study was conducted in ATBUTH Bauchi, information on sonographic findings in patients with first trimester vaginal bleeding was extracted from the records at Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH) Bauchi between 2016 and 2018. Data was analyzed using Statistical package for social sciences version 20.0. Descriptive and inferential statistics were obtained at $p<0.05$.

Results: A total of three hundred (300) patients' data were evaluated. Highest ages were between 26 to 35 years (163cases; 54.3%), followed by the age group between 15 to 25years (103cases; 34.3%), then age range of 36 to 45years has 33 cases (11.0%), while the least was within the range of 46 to 55 years (1 case; 0.3%). The findings were categorized into two, normal scan (135 cases; 45.0%) and majorly the abnormal findings (165 cases; 55.0%) which was further divided into abnormal obstetric (82.2%) and non-obstetric findings (18.8%). The most common finding out of the 165 cases of abnormal findings was incomplete abortion (39 cases; 13.0%), missed abortion (31 cases; 10.3%) and complete abortion (24 cases; 8.0%). The least findings were embryonic demise, chronic PID, adnexal and cervical masses, and mild uterine hernia (1 case each; 0.3% each). There was significant association of PV bleeding with age, normal scan, incomplete and complete abortion, ectopic pregnancy and threatened and missed abortion with $r<050$.

Conclusion: The pattern and proportions of sonographic findings was assessed, with incomplete abortion (13.0%), missed (10.3%) and complete abortion (8.0%) being the most common of the abnormal scans in the entire sample of the study. There was a significant association of PV bleeding with age, normal scan, and five abnormal obstetric findings.

Keywords: **vaginal bleeding, sonographic findings, first trimester, abortion.**

Introduction

First trimester vaginal bleeding is any discharge of blood from the passage leading from the opening of the vulva to the cervix of the uterus, in the first twelve weeks of pregnancy [1]. The period of first trimester is accompanied with series of processes that span from fertilization to early fetal life [2]. Bleeding in this period therefore alerts a sign of problem in most of the cases especially when it persists for up to the first twenty weeks of pregnancy. Vaginal bleeding has been estimated to occur in somewhat percentage of most pregnant women which can happen at anytime from conception to the end of pregnancy [3].The causes of vaginal bleeding in the first trimester of pregnancy could be due to a variety of factors. These factors may be categorized into obstetric and non-obstetric causes [4]. Obstetric causes may include complete or incomplete abortion, embryonic demise, sub-chorionic hemorrhage, ectopic pregnancy and other related associations [1]. The non-obstetric causes may be vaginitis, cervicitis, cystitis, polyps, trauma and other non-obstetric factors [1].

Making use of only clinical histories and pelvic examinations is inadequate in assessing the cause of bleeding and prognosis. Ultrasound play a key role in assessing bleeding causes, prognosis and predicting the status of abnormal pregnancy [1]. It is regarded as an excellent tool in assessing the prognosis of pregnancy such as whether there will be a safe continuation of the pregnancy or not.

However, the significance of ultrasound cannot be overemphasized as it was found that no biological side effects in the fetus has been seen when used at the usual diagnostic frequencies between 2.5 to 15MHz [5].

Some studies conducted of recent in different places across the world on sonographic findings in patients with first trimester vaginal bleeding revealed incomplete abortion as the commonest finding [6], especially that of Mbugua (1999) and Githinji (2014) while in some places, such findings were the least found [7]. Also studies by researchers like Juliano and Sauter (2012) came up with different result finding (spontaneous abortion) and many other authors had unique findings in their research scopes [8]. In view of the aforementioned studies evidenced by the stated distinguished authors, casual observation by the researcher shows that these findings may vary with places and with some other possible factors contributing to the bleeding cause hence, the need to carry out this study in my local population. This study assessed the pattern of sonographic findings in patients with first trimester vaginal bleeding at ATBUTH, Bauchi.

Materials and methods

A retrospective study was conducted. Sonographic data, obtained between January 2016 and January 2018, in the radiology department of Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH) Bauchi state were reviewed. Ethical clearance to conduct the research was obtained from the research committee of the institution.

Determination of the pattern of sonographic findings was done by establishing the descriptive statistics of the data obtained. Assessment of the relationship between per vaginal bleeding and the various patterns of the sonographic findings were made by analyzing the association of the PV bleeding and some other factors like age and parity using statistical test tools in the SPSS software.

Sonographic findings were grouped into normal and abnormal, of which prevalence was ascribed to those with highest or lowest percentages, respectively. While significance was ascribed to correlation values obtained and as well grouped. A convenient sampling technique was used. Data of patients with first trimester vaginal bleeding was only assessed, with the exception of data of patients with vaginal bleeding in any of the trimesters beyond first trimester pregnancy. A data capture sheet was used when collecting the data.

Results

A total of 300 patient data were evaluated; age range of 17 to 55 years with a mean age of 28 years, the median age was 27 years with a standard deviation of 6. However, the ages were grouped into four, 15 to 25, 26 to 35, 36 to 45, and 46 to 55 years respectively. Majority were within the age of 26 to 35 years (163cases; 54.3%), followed by the age group between 15 to 25years (103cases; 34.3%). Thirty three cases (11.0%) were within the age range of 36 to 45years, while one case (0.3%) was within the range of 46 to 55 years (Figure 4.1). Majority of the cases were found in five patients, accounting for 2.3% of the total cases. The least were found in three categories, for patients with 6, 11 and 12 with 1 case each accounting for 0.3%. This tells how limited the data of patients with parity were studied in the research (Table 2).

This distribution shows the categorization of all the indications and those with queries. Of the 300 indications, 176 (58.7%) were PV bleeding only, 12 (4.0%) was PV bleeding with query complete abortion, 3(1.0%) PV bleeding querying early cyesis, 9 (3.0%) for PV bleeding querying ectopic pregnancy, 29 (9.7%) for PV bleeding querying incomplete abortion, 9 (3.0%) PV bleeding querying Lower Abdominal Pain (LAP), 9 (3.0%) for querying missed abortion, 6 (2.0%) for PV bleeding querying molar gestation, 2 (0.7%) for PV bleeding querying PID, 2 (0.7%) for PV bleeding querying septic abortion, and 43(14.3%) for PV bleeding querying threatened abortion (Table 4.3). As shown in table 4.1 below, in all the 300 (100%) patients, 165 (55.0%) had abnormal while 135 (45.0%) cases were concluded as normal scan. Of the cases, 3 (1.0%) were found to have nonviable twin gestation, 9 (3.0%) had adnexal cyst, 1 (0.3%) had adnexal mass, 3 (1.0%) had blighted ovum, 3 (1.0%) had bulky uterus, 1 (0.3%) had cervical mass, 1 (0.3%) had chronic PID, 24 (8.0%) had complete abortion, 4 (1.3%) had ectopic pregnancy, 1 (0.3%) had embryonic demise, 10 (3.3%) had gestational trophoblastic disease (GTD), 39 (13.0%) had incomplete abortion, 4 (1.3%) had inevitable abortion, 1 (0.3%) had mild uterine hernia, 31 (10.3%) had missed abortion, 9 (3.0%) had Pelvic inflammatory disease (PID), 15

(5.0%) had threatened abortion, and 6 (2.0%) had uterine fibroid.

There was a significant correlation between ultrasound findings with age with an r-value (Spearman correlation) of .040 as shown in the table 2 below. However, there was no significant correlation between ultrasound findings and parity with Spearman r-value of.166 as shown in the table 4.2 below as well.

Age has a significant association with amount of PV bleeding while parity does not. Normal scan was found to have significant association with PV-bleeding with Pearson P-value of .034. Also, incomplete abortion, missed abortion, complete abortion, threatened abortion and ectopic pregnancy were found to have association significantly with the amount of PV bleeding. However, no association was found between ultrasound findings of inevitable abortion, embryonic demise, blighted ovum and gestational trophoblastic disease with amount of PV bleeding (Table 4.3).

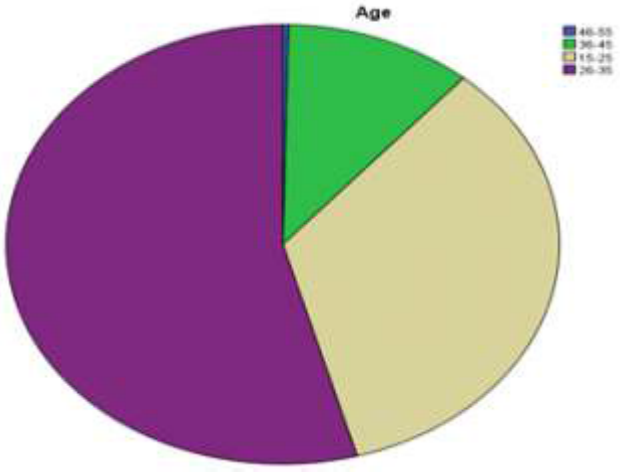

Figure 1: A Pie chart Showing Age Distribution

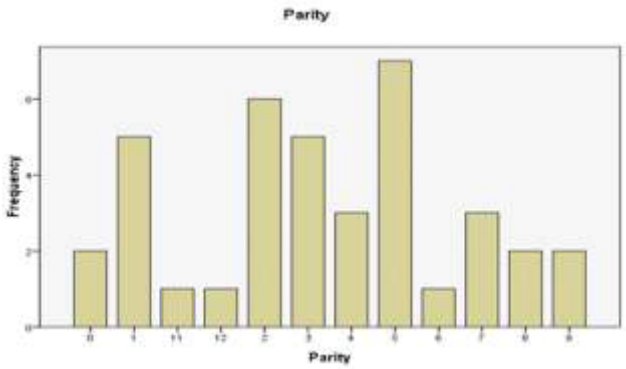

Figure 2: Distribution of Parity and Sonographic Findings

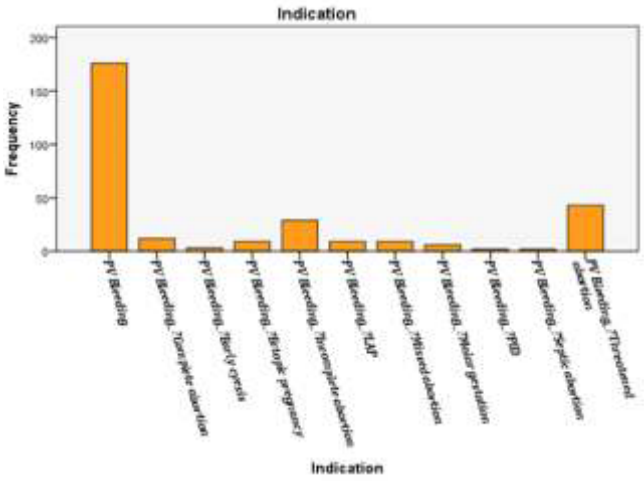

Figure 3: Frequency Distribution of Indications

Table 1: Pattern of sonographic findings

S/NO	SONOGRAPHIC FINDINGS	FREQUENCY
1	Incomplete abortion	39
2	Missed abortion	31
3	Complete abortion	24
4	Threatened abortion	15
5	Ectopic pregnancy	4
6	Gestational trophoblastic disease	10
7	Blighted ovum	3
8	Embryonic demise	1
9	Inevitable abortion	4
10	Non-viable twin gestation	3
11	Adnexal cyst	9
12	Pelvic inflammatory disease (PID)	9
13	Chronic PID	1
14	Uterine fibroid	6
15	Adnexal mass	1
16	Cervical mass	1
17	Bulky uterus	3
18	Mild uterine hernia	1
	Sum (of abnormal)	165
19	Normal scan	135
	TOTAL	300

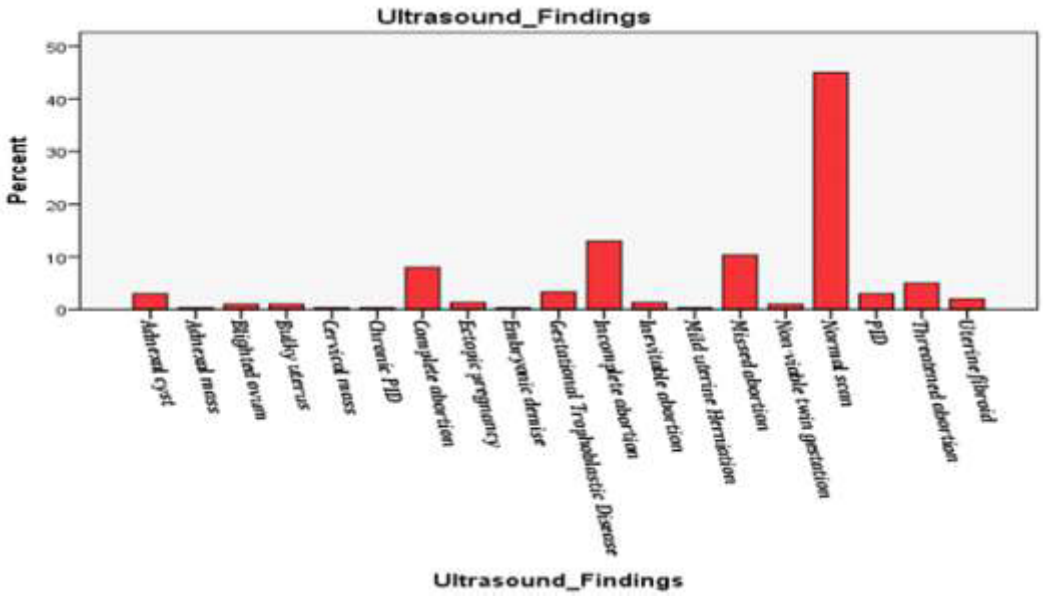

Figure 4: Proportion of Sonographic Findings

Table 2: Spearman correlation of ultrasound findings with age

S/No	Variable	r-value	p-value	Conclusion
1	Age	.040	.051	Significant
2	Parity	.166	.074	

Table 3: Summary of Significant Association

S/ No	Indications	Ultrasound Findings	Pearson Chi square Correlationr -value	Significance	Other Variables	r-value	Significance
1	PV bleeding	Normal scan	.034	Significant	Age	.040	Significant
2	PV bleeding	Incomplete abortion	.006	Significant	Parity	.166	Not Significant
3	PV bleeding	Missed abortion	.021	Significant			
4	PV bleeding	Complete abortion	.049	Significant			
5	PV bleeding	Ectopic pregnancy	.000	Significant			
6	PV bleeding	Inevitable abortion	.072	No Association			
7	PV bleeding	Threatened abortion	.048	Significant			
8	PV bleeding	Embryonic demise	.910	No Association			
9	PV bleeding	Blighted ovum	.070	No Association			
10	PV bleeding	Gestational trophoblastic disease	.606	No Association			

Discussion

The aim of this research was to study the ultrasound findings in patients with first trimester vaginal bleeding, its proportions and other variables that may be associated with these findings.

A total of 300 patient data were evaluated having the age range of 17 to 55 years, a mean of 28 years, a median of 27 years with a standard deviation of 6. Majority were within the age range of 26 to 35 years consisting of 163 cases (54.3%), which was expected as this is the time when child bearing is at its highest occurrence. The sample size of this study was larger than that of that used by Githinji (2014) in his research where he used 231 patients and other works such as Singh (2016). The mean, median and standard deviation of the ages from this study and his however, were somewhat similar. A similar result was observed in a Pakistan study on evaluation of cases reporting with bleeding per vagina during the first 20 weeks of gestation [9]. Moreover, a similar study conducted by Singh

(2016) on assessment of first trimester vaginal bleeding using ultrasound recorded that various types of abortions constituted the commonest cause of first trimester bleeding. This finding is similar to the one observed in this present study. However, Shivanagappa, Sagar and Manoli (2015) had larger sample sizes than both this work and that of Githinji (2014), and this may be due to the magnitude of obstetric admissions of 4247 patients in their setting (a comparative study with clinical examination). These spectra of variations in the demographics of the related studies could said to have been due to location difference, specific objectives of the research, availability of study means and accessibility to research data.

Generally, with respect to the normal and abnormal findings established in this study, the proportion of abnormal scan is more than the normal scan, as demonstrated in the results that normal scan constituted 45.0%, while abnormal scan accounted for 55.0% of all the cases. The most common of the finding in the research when viewed individually revealed normal scan with135 cases accounting for 45.0% of the total cases in the study. However, the result findings were categorically divided into normal and abnormal findings, in which the most common of the abnormal findings was found to be incomplete abortion with 39 cases accounting for 13.0%, followed by missed abortion (31cases;10.3%), and complete abortion (24cases;8.0%). This was in line with the works of other authors such as that of Githinji (2014) and Singh (2016), where the abnormal ultrasound findings superseded the normal scans in the entire cases of their studies. This similarity may be attributed to the fact that the majority of causes of first trimester bleeding are miscarriages and other problems which could be gynecological. On the other hand, the least from the results in this study were embryonic demise and nonviable multiple gestation (0.3% each), which are obstetric, then adnexal mass, cervical mass, mild uterine hernia and chronic PID (0.3% each also) which are non-obstetric.

As bleeding causes were earlier categorized into obstetric and non-obstetric causes [4], the grouping was thus proven right as it was evidenced in the results obtained from this research as summarized in table 4.1

The overall proportion of the non-obstetric findings in abnormal scans is 18.8% with 31cases, while the overall proportion of obstetric findings in abnormal scans is 81.2% with 134 cases. The obstetric causes found were incomplete abortion, complete abortion, missed abortion, threatened abortion, gestational trophoblastic disease, ectopic pregnancy, inevitable abortion, embryonic demise, nonviable twin gestation, and blighted ovum. These findings were slightly similar to those obtained from the studies conducted by Githinji (2014) and Shivanagappa, Sagar and Manoli (2015) on sonographic findings in first trimester bleeding [2], [10].

On the other hand, the non-obstetric causes were adnexal cyst, adnexal mass, cervical mass, bulky uterus, Pelvic Inflammatory Disease (PID) and chronic PID, mild uterine herniation, and uterine fibroid. Thus, these non-obstetric findings were found exceptional as the aforementioned related studies had no similar findings as such.

There was a significant correlation between ultrasound findings and age distribution with a Spearman r-value of .040 while no significant correlation was found between ultrasound findings and parity of patients with a Spearman r-value of .166. There was a significant association found between ultrasound finding of incomplete abortion and amount of Per Vaginal bleeding (Pearson r-value: .006) with 13.0% of the patients within complete abortion reporting vaginal bleeding. There was a significant association found between ultrasound finding of missed abortion and amount of Per Vaginal bleeding (Pearson r-value: .021) with10.3% of the patients with missed abortion reporting vaginal bleeding. There was a significant association found between ultrasound finding of complete abortion and amount of Per Vaginal bleeding (Pearson r-value: .049) with 8.0% of the patients with complete abortion reporting vaginal bleeding. There was a significant association found between ultrasound finding of threatened abortion and amount of Per Vaginal bleeding (Pearson r-value: .048) with 5.0% of the patients with threatened abortion reporting vaginal bleeding. There was a significant association found between ultrasound finding of ectopic pregnancy and amount of Per Vaginal bleeding (Pearson r-value: .000) with 1.3% of the patients with ectopic pregnancy reporting vaginal bleeding. No significant association was found in inevitable abortion (Pearson P-value: .072, with 1.3%), blighted ovum (Pearson r-value: .070, with 1.0%),

embryonic demise (Pearson P-value: .910, with 0.3%), and gestational trophoblastic disease (Pearson P-value: .606, with 3.3%) with amount of Per Vaginal bleeding.

Conclusion

The pattern of sonographic findings was assessed and abnormal findings were the most common observed. The proportions of each sonographic finding was established hence, incomplete abortion (13.0%), missed (10.3%) and complete abortion (8.0%) were the most common of the abnormal scans in the entire sample of the study. There was a significant correlation of PV bleeding with age, normal scan, incomplete and complete abortion, ectopic pregnancy and threatened and missed abortion with r-values less than 0.05.

Recommendation

Per vaginal bleeding in early pregnancy should arouse the suspicion of a variety of miscarriages which may be life-threatening to either the mother or both mother and the fetus. A larger multicenter study is needed in order to establish more relevant information including detailed patient clinical history to provide a concrete data on this subject matter.

References

1. Vishwanath, Y., Santosh and Bharathi, Ultra sonographic evaluation and management of the first trimester bleeding. *Journal of Dental and Medical Sciences,* 2015. 14(2): 43-36.
2. Githinji, I. N., Sonographic findings in patients with first trimester bleeding and related associations in Nairobi. Kenya. Elseviers Inc. (2014).
3. Singh, K., Assessment of first trimester vaginal bleeding using ultrasound sonography. Asian Journal of Biomedical and Pharmaceutical Sciences 2016, 6(57): 54-56.
4. Creinin, M. D., Schwartz, J. L., Guido, R. S., *et al.,* Early pregnancy failure-current management concepts. *Obstet Gynecol Surv,* 2001,56(2): 105-113.
5. Rumack, C. M., Wilson, S.R., Charboneau, J.W., and Levine, D., Diagnostic ultrasound. 4th Edition. U. S. A. Mosby (an affiliate of Elsevier),2011, 2(1): 1041-1088.
6. Mbugua, F. K., The Morbidity Patterns in the Acute Gynecological Unit in a Rural District Hospital in Kenya. *Postgraduate dissertation, UON.* (1999).
7. Oguntoyinbo, A. E., and Aboyeji, A. P., Clinical pattern of gynecological/early pregnancy complaints and the outcome of pelvic sonography in a private diagnostic center in Ilorin. Niger Journal Clinical Practice,2011. 14(2): 223-227.
8. Juliano, M. L. and Sauter, B. M., Fetal outcomes in first trimester pregnancies with an indeterminate Ultrasound. Journal of Emergency Medicine,2012. 43(3): 417-22.
9. Bangash, N. and Ahmed, H., Evaluation of cases reporting with bleeding per vagina during first 20 weeks of gestation. *Pakistan Armed Forces Medical Journal,* 2005. 55(3): 219-23.
10. Mamatha, S. Sagar, S. G. and Manoli, N., Ultrasound evaluation of vaginal bleeding in first trimester of pregnancy: a comparative study with clinical examination. International Journal of Scientific Study, 2015, 3(7):12-17