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Prevalence of ectopic pregnancy in surgical patients at a tertiary hospital in Rivers State, Nigeria

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Abstract

Background: Ectopic pregnancy is the most common cause of maternal mortality in the first trimester of pregnancy. Presentation is usually late especially in the developing countries of the world. Surgery is the preferred management modality compared to other management options because of challenges with monitoring in cases of un-ruptured ectopic pregnancies. The estimated global prevalence of ectopic pregnancy is 1-2%%.

Aim: To determine the prevalence of ectopic pregnancy in surgical patients at the Rivers State University Teaching Hospital (RSUTH).

Method: This study was a one-year retrospective research of Surgical (Surgery and Obstetrics/gynaecology departments) patients who had ectopic pregnancy at the RSUTH. The patients comprised of all the consecutive cases of the surgeries in these departments for the period under review. Permission for the study was obtained from the Head Department of obstetrics and gynaecology RSUTH. Structured profoma was used to extract information from patients' case notes and analyzed using SPSS version 25.

Result: The subjects for the study were 250, comprising of 98 (39.2%) males and 152 (60.8%) females. The age range was 22 years to 56 years. The mean age was 31 years of which 132 (52.8%) were obstetrics and gynaecological surgeries while 118 (47.2%) were non-gynaecological surgeries; 16 (6.4%) had ectopic pregnancy of which 12 (4.8%) were ruptured and 4 (1.6%) were unrutured. All the patients that had ectopic pregnancy had laparotomy with salpingectomy.

Conclusion: The prevalence of ectopic pregnancy in surgical patients at the RSUTH was 6.4%. Majority of the patients present with ruptured ectopic pregnancy. All of the patients had surgical intervention (emergency laparotomy with salpingectomy).

Keywords: Prevalence; Ectopic pregnancy; Surgical patients; Tertiary hospital; Nigeria

1. Introduction

Ectopic pregnancy is the most common cause of maternal mortality on the first trimester of pregnancy. Presentation is usually late especially in the developing countries of the world. Surgery is the preferred management modalities

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compared to other management options because of challenges with monitoring in cases of un-ruptured ectopic pregnancies.[1,2]

Ectopic pregnancy is a challenging life threatening gynaecological emergency.[1] It is defined as the abnormal implantation of fertilized ovum or blastocyst at sites other than the endometrial cavity of the uterus.[1,3] The estimated global prevalence of ectopic pregnancy is 1-2%.[3] In the developing countries of the world myriad hospital based studies revealed ten-times higher case-fatality rate compared to developed countries of the world.[3]

At least 90% of all ectopic pregnancies are located in the fallopian tube and 80% of these are located in the ampullary segments of the tube.[3,4-8] Bleeding from the ruptured fallopian tubes resulting from ectopic pregnancy remains the most common cause of maternal mortality in the first trimester of pregnancy.[1,9-12]

In research conducted by Wekere FCC et al - a five-year review of ectopic pregnancy at the Rivers State University Teaching Hospital, the prevalence of ectopic pregnancy was 2.1% or 1 in 47 deliveries and 3.2% of gynaecological admissions.[4] In a study by Uche-Nwidagu et al in Southeast Nigeria the prevalence of ectopic pregnancy was 1.31% of obstetric deliveries and 2.0% of gynaecological admissions.[7] Olamijulo JA et al in Southwestern Nigeria in their research revealed the prevalence of ectopic pregnancy as 2.2% of the deliveries and 3.5% of gynaecologcal admissions.[8]Bulus J et al in North central Nigeria showed the prevalence of ectopic pregnancy as 1.27% of deliveries and 8.3% of gynaecological admissions.[9]

The diagnosis of ectopic pregnancy is made primarily through transvaginal ultrasound (TVS) as supported by quantitative the serum human chorionic gonadotrophin (hCG).[11] Any woman of reproductive age experiencing abnormal visual bleeding without abdominal pain is at risk of ectopic pregnancy and should be followed up closely until a diagnosis is made.[11,12] Researchers have widely accepted that the presence of hCG levels above the discriminatory zone of 1500-2500 iu/L, should indicate an intrauterine pregnancy (IUP).[11] This is defined by the existence of a gestational sac visible by TVS.[11]. An abnormal gestational sac is implied when there is absence of intrauterine gestation.[11,12] When the hcG concentration is above the discriminatory zone.[12]

Patients who have failed to meet the criteria of medical management are managed surgically, laparoscopically or by laporatomy.[12] In the developing countries majority of patients present late, with ruptured ectopic pregnancy and are managed surgically – through lapartomy.[12] Worthy of note that all child bearing women are at risk of ectopic pregnancy.[11]Scholars have identified many risk factors for the occurrence of ectopic pregnancy which includes the age of the mother, previous ectopic pregnancy, history of pelvic infections[1,2,11]

In addition, there are researchers have linked ectopic pregnancy with infertility and infertility treatment including assisted reproduction techniques and previous reconstructive fallopian tube surgeries.[11,12] Furthermore, contraceptive use and smoking are identifiable risk factors of ectopic pregnancy.[11]

The study defers from other ectopic pregnancy related studies carried out prefusely as it analyses the prevalence of ectopic pregnancy in surgical patients at the Rivers State University Teaching Hospital (RSUTH).

Aim

To determine the prevalence of ectopic pregnancy in surgical patients at the Rivers State University Teaching Hospital (RSUTH).

2. Material and methods

2.1. Subjects

This study was a one-year retrospective research of Surgical (Surgery and Obstetrics/gynaecology departments) patients who had ectopic pregnancy at the RSUTH. The patients comprised of all the consecutive cases of the surgeries in these departments for the period under review. They comprised of patients with ectopic pregnancy who were treated at the Rivers State University Teaching Hospital between January 1, 2020 to December 31, 2020.

During the review process, the medical records of all participants were retrieved from the gynaecoogical department and during the review process confidentiality of patient data were taken into consideration. The study was conducted in accordance with Helsinki Declaration, under permission of the Head Department of obstetrics and gynaecology.

- Inclusion criteria
- Diagnosis of ectopic pregnancy
- Exclusion criteria
- Refusal to be hospitalized
- Incomplete patient data

2.2. Research Method

Pelvic ultrasound scan was used for all the patients and in some cases combined with TVS to clearly demonstrate slow leaking ectopic or unruptured ectopic pregnancy which revealed absence of an intra uterine fetal sac. Quantitative Beta Hcg was not used in our patients because most of them presented late with ruptured ectopic gestation and non-met the criteria for medical management for ectopic pregnancy.

2.3. Statistical analysis

Statistical analysis were performed using SPSS version 25 software program (IBM, Chicago, USA). Variables with normal distribution were expressed as mean ± standard deviation, continuous variables with normal distribution also as variables as frequency and percentages (%).

3. Results

Table 1 Indicating the number of subjects recruited for the study, the age range, the mean age and the prevalence of diabetes mellitus in surgical patients

Number of subjects recruited	**250**
Age range	22 – 56 years
The mean age	31 years
The prevalence of ectopic pregnancy	16 (6.4%)

Table 2 Sex distribution of subjects in the study

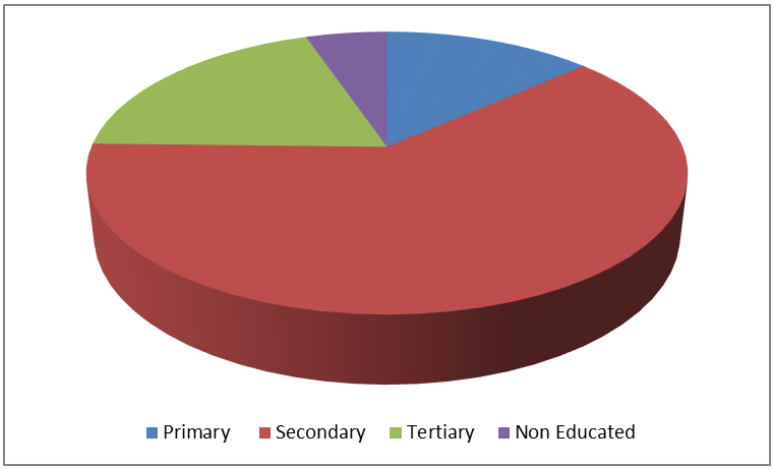
Sex	**Frequency**	**Percentage (%)**
Male	98	39.2
Female	152	60.8
	250	100

Table 3 Distribution of Ectopic Pregnancy in Surgical Patients at RSUTH

Ectopic Pregnancy	**Frequency**	**Percentage (%)**
Ruptured	12	4.8
Unruptured	4	1.6
	16	**6.4**

The subjects for the study were 250, comprising of 98 (39.2%) males and 152 (60.8%) females. The age range was 22 years to 56 years. The mean age was 31 years of which 132 (52.8%) were obstetrics and gynaecological surgeries while 118 (47.2%) were non-gynaecological surgeries. 16 (6.4%) had ectopic pregnancy of which 12 (4.8%) were ruptured and 4 (1.6%) were unrutured; 16 (6.4%). All the patients that had ectopic pregnancy had laparotomy with salpingectomy. For the educational status of the respondents 15 (6%) had primary level of education, 150 (60%) had secondary education, 75 (30 %) had tertiary education and 10(4 %) had no formal education.

Pie chart showing



Primary –15 (6 %); Secondary – 150 (60 %); Tertiary – 75 (30%); No formal education – 10 (4 %); Total = 250 (100%)

Figure 1 Distribution of educational status of the subjects

3.1. Study Population

This study was conducted in the Rivers State University Teaching Hospital. It is **a** 370 bed hospital located at Harley Street Port Harcourt Local Government Area of Rivers State, South South Nigeria. It is a tertiary health institution that provides all levels of health care services to Rivers, Bayelsa, Delta, Imo, Abia and Akwa-Ibom States. The Obstetrics /Gynecology and Surgical department are of clinical departments of the hospital with twelve (12) and ten (10) Consultant Staff respectively.

3.2. Sample size estimation

The sample size of 250 was calculated using the Kish Leslie formula for cross-sectional studies calculated, based on 2% prevalence from study by the Oppong AA in a referral Hospital in Volta Region in Ghana and a confidence level of 95%. $n= Z^2Pq/d^2$. Where n is the desired sample size.

Z is the standard normal deviate usually set at 1.96, which corresponds to the confidence interval P is the proportion of patients with ectopc pregnancy which in this case is 2% q is complementary proportion equivalent to one (1), that is 1- 0.1% equal to 0.9%, d is the degree of accuracy desired which is 5.0% (0.05%) $n= 1.96^2 \times 0.1 (1- 0.1)/0.05^2= 245$.

This was rounded up to the nearest whole number, the reason for using 250 as the sample size.

4. Discussion

Our study showed the prevalence of ectopic pregnancy in surgical patients at the Rivers State University Teaching Hospital (RSUTH) as 6.4% (Table 1).This was not in agreement with the research conducted by Wekere FCC et al - a five-year review of ectopic pregnancy at the same institution, the Rivers State University Teaching Hospital, the prevalence of ectopic pregnancy was lower 2.1% or 1 in 47 deliveries and 3.2% of gynaecological admissions.[4]The reason for this was probably due to the fact that the index study was confined only to surgical patients compared to the study by Wekere et al in which case was conducted amongst gynaecological patients.[4]

In several other studies conducted by Uche-Nwidagu et al in Southeast Nigeria, Olamijulo JA et al in Southwestern Nigeria and Bulus J et al in North central Nigeria the prevalence of ectopic pregnancy were all lower than the figures gotten in our study which were 1.31% of obstetric deliveries and 2.0% of gynaecological admissions, 2.2% of the deliveries and 3.5% of gynaecologcal admissions and 1.27% of deliveries respectively.[7-9] However, when compared with the Bulus et al study in terms of gynaecologcal admissions the prevalence of ectopic pregnancy was higher at 8.3% of gynaecological admissions.[9] when compared with our findings in our study which was 6.4% (see table 1). In a study by Oppong et al in Volta region of Ghana the prevalence of ectopic pregnancy was 2.0% which was lower than that shown in our study and was also similar with that of the global figure of 2.0%.[3]

As in several developed countries of the world, the prevalence of ectopic pregnancy in the United states is between 1 to 2%, and ruptured ectopic pregnancy accounting for 2.7% of pregnancy related deaths.[13] This is lower than what was revealed in our study with a prevalence of 6.4% (table 1). The US prevalence of ectopic pregnancy is lower than what was shown in several regions of Nigeria and Africa.[3,6-9] There several reasons of which are good health seeking behavior of persons in the developing countries of the world, identifying the risk factors of ectopic pregnancy top most of which pelvic inflammatory disease and early treatment compared to those in the developing countries of the world.[1,8-11]

Our study revealed the prevalence of ruptured ectopic pregnancy was 4.8% which was 75% of the prevalence of the total prevalence of 6.4% see table 3, this indicates that the majority of the patients presented with ruptured ectopic pregnancy. This was in agreement with studies elsewhere in the developing countries at variance with studies in the developed countries of the world.[3,6-9,13]

5. Conclusion

The prevalence of ectopic pregnancy in surgical patients at the RSUTH was 6.4%. In low resourse settings like ours, majority of the patients present with ruptured ectopic pregnancy. All of the patients had surgical intervention: (emergency laparotomy with salpingectomy). Ectopic pregnancy is a gynaecological emergency prompt diagnosis and treatment remains key in preventing mortality.

Compliance with ethical standards

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Disclosure of conflict of interest

Authors declare that there was no conflict of interest.

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Statement of ethical approval

In line with the Helsinki Declaration (revised 2013) permission for the study was granted by the Head obstetrics and gynaecology department of the Rivers State UnIversity Teaching Hospital.

Statement of informed consent

This was a retrospective study

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