HSI Health Sciences Investigations Journal

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ISSN Online 2704-4890 | ISSN Print 2720-7609

Online first publication

Original Research Article

HSI Journal (2022) Volume 3 (Issue 2):374-379. https://doi.org/10.46829/hsijournal.2022.12.3.2.374-379

Open Access

Clinical presentations and outcomes of ectopic pregnancy at a tertiary referral hospital in Ghana

Kwaku Asah-Opoku [1], Donne K Ameme [2], Kareem Mumuni [1], Alfred Yawson [3], Samuel Oppong [1], Joseph Seffah [1], Kobinah Nkyekyer [1]

[1] Department of Obstetrics and Gynaecology, University of Ghana Medical School, College of Health Sciences, University of Ghana, Accra, Ghana; [2] Ghana Field Epidemiology and Laboratory Training Programme, University of Ghana, School of Public Health, Accra, Ghana; [3] Department of Community Health, University of Ghana Medical School, College of Health Sciences, University of Ghana, Accra, Ghana

Received July 2022; Revised August 2022; Accepted September 2022

Abstract

Background: Ectopic gestation is a major cause of morbidity and mortality among women of reproductive age. The clinical presentations vary depending on whether it is ruptured or not. Understanding the various modes of presentation is therefore critical to early detection and management to reduce associated morbidity and mortality. We determined the patterns of presentation and outcomes of ectopic pregnancy in the Korle Bu Teaching Hospital (KBTH) of Ghana.

Objective: This study aimed to determine patterns of presentation of ectopic pregnancy in the KBTH of Ghana and the outcomes for patients presenting with the condition.

Methods: We collected data from pregnant women presenting to the Obstetrics and Gynaecology Department of the KBTH during the study period and diagnosed with ectopic pregnancy. A case of ectopic pregnancy was any woman diagnosed by an obstetrician/gynaecologist either by clinical features or pelvic ultrasound. Data were collected on sociodemographic characteristics, as well as clinical history, examination findings, treatment, and outcomes. Data were analyzed descriptively to determine the patterns of presentation of ectopic gestations.

Results: A total of 104 ectopic pregnancies representing 8.81% (n = 104/1,180) of gynaecological emergencies were recorded during the study period. Of the 104 ectopic pregnancies recorded, 6.7% (n = 7) were diagnosed as unruptured. The mean (± standard deviation) gestational age at diagnosis of ectopic pregnancy was 7.2 ±1.9 weeks. About 94.2% (n = 98) of patients with ectopic pregnancy had visited a health facility before the visit at which the diagnosis was eventually made, and 76.9% (n = 80) of the ectopic cases had ruptured at diagnosis. For 1.9% (n = 2) of the participants, ectopic pregnancy was detected by ultrasound. The triad of amenorrhoea in 91.3% (n = 95), lower abdominal pains in 91.3% (n = 95) and irregular vaginal bleeding in 47.1% (n = 49) of the ectopic pregnancies were the main presenting symptoms of ruptured ectopic pregnancy.

Conclusion: The incidence of ruptured ectopic pregnancy in the KBTH was high. Primary health care practitioners should rule out ectopic pregnancy in women of the reproductive age group who present with the triad of amenorrhoea, lower abdominal pain and irregular vaginal bleeding.

Keywords: Ectopic, gestation, presentation, patterns

INTRODUCTION

Ectopic pregnancy occurs in approximately 1 − 2% of pregnancies globally [1,2]. It remains a common cause of morbidity and mortality among women of reproductive age [3]. It is a recognised gynaecological emergency as it can rupture, resulting in intra-abdominal bleeding and death if not diagnosed early or left untreated [4,5]. Whilst in the United Kingdom, ectopic pregnancy is reported to have a mortality rate of 35 deaths per 100,000 ectopic pregnancies [6], an estimated one out of every ten women admitted to a hospital in the developing world with a diagnosis of ectopic pregnancy ultimately dies from the condition [7]. In Africa, the maternal mortality ratio from ectopic pregnancy ranges from 1.2 − 3.5% [8]. At Korle Bu Teaching Hospital (KBTH), Ghana's foremost tertiary hospital, ectopic pregnancies constituted 8.7% of the cause of maternal deaths from the year 2004 through 2008 [9]. The fatality rate of ectopic pregnancies was reported to be 27.9 cases per 1000 pregnancies a little over two decades earlier, with more than half of the fatalities occurring before

* *Corresponding author*
Email: kasah-opoku@ug.edu.gh

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or soon after arrival in the hospital [10]. Compared to unruptured cases, ruptured ectopic gestations are associated with increased risk of blood transfusion, longer hospital stay, increased occupancy of hospital beds that limits resources for other admissions, increased cost to the patients, as well as the health care system and sometimes mortality. Therefore, early detection and appropriate intervention are pivotal in reducing morbidity and mortality associated with the condition. To detect early and institute the necessary management interventions to reduce morbidity, mortality, and socioeconomic burden associated with ectopic gestations, there is the need to understand the various modes of presentation. This study sought to determine patterns of ectopic pregnancy in the KBTH of Ghana and the outcomes for patients presenting with the condition.

MATERIALS AND METHODS

Study design and sites

This cross-sectional study was conducted at the Department of Obstetrics and Gynaecology in KBTH. Data were collected from pregnant women who presented to the department with the diagnosis of ectopic pregnancy. The KBTH is a tertiary referral centre located in Accra, the capital city of Ghana. The hospital is used for clinical teaching by the University of Ghana Medical School. Patients attending the antenatal clinic and gynaecology unit have variable socioeconomic, cultural and religious backgrounds. The facility has about 2000 beds and approximately 10,000 to 12,000 deliveries recorded annually. The gynaecology ward receives cases from the gynaecology clinic and the gynaecology emergency unit. An average of one case of ectopic gestation per day is seen at the gynaecology emergency. The average daily out-patient attendance at the Gynaecology and the Maternity units of the hospital is 60 and 90, respectively. Ruptured ectopic pregnancies are managed by salpingectomies, whilst unruptured ectopic pregnancies are managed by medical treatment if they meet the requirements. The inclusion criteria for medical management were the patient's consent, haemodynamic stability, no fetal heart activity, gestational sac diameter < 3.5 cm, serum beta human chorionic gonadotropin < 5000 international units per litre, and no medical history of peptic ulcer disease, renal, and hepatic or haematological disease.

Sample population

Pregnant women presenting to the Obstetrics and Gynaecology Department of the KBTH and diagnosed with ectopic pregnancy were eligible for inclusion. Participants were recruited into the study after the provision of written or verbal informed consent.

Data collection

Two experienced multilingual research assistants were recruited for the study and trained in administering the questionnaire for data collection. To allow for women who did not speak English, the researcher and the research assistants interpreted the questions in local dialects and then back translated them to English for uniformity. The questionnaire was pretested in the Department of Obstetrics and Gynaecology of the Greater Accra Regional Hospital. Data was collected on the sociodemographic characteristics of the women as well as their clinical history and diagnosis. Data were collected from 1st September to 30th November 2015 for all patients diagnosed with ectopic pregnancy. A case of ectopic pregnancy was any woman diagnosed by an obstetrician/gynaecologist either by clinical features or pelvic ultrasound. Patients who had surgery were interviewed on the second or third postoperative day. Those who had unruptured ectopic medical management were interviewed while on admission at the gynaecology ward. Data collected included sociodemographic, obstetric and gynaecological characteristics and presenting symptoms. Examination and operative findings, as well as outcomes of treatment, were retrieved from clinical notes.

Statistical analysis

The data were checked for completeness and inconsistencies in each questionnaire. Data were analysed using the Statistical Package for Social Sciences version 21 for Windows (Armonk, New York, USA: IBM Corporations). Descriptive statistics including frequency, proportions, mean and standard deviation were used for demographic and patient characteristics and presented in tables and graphs. Mean values were calculated with ± standard deviation.

RESULTS

Socio-demographic factors

During the period of study, a total of 104 cases of ectopic pregnancies were recorded, representing 8.81% (n = 98/1108) of gynaecological emergencies and 12.40% (n = 104/839) of gynaecological admissions during the same period. Approximately 6.7% (n = 7) of the ectopic pregnancies diagnosed were unruptured. The mean age of respondents was 28.9 ± 5.3 years. The majority (51.9%, n = 54) of participants were married, with a modal educational level of 31.4% (n = 32) in Junior High School (Table 1).

Obstetrics and gynaecological history

The majority (56.7%, n = 59) of the respondents had a previous induced abortion, and more than half had their sexual debut as teenagers (Table 2). The mean age of sexual debut was 19.4 ± 2.8 years for the women who presented with ectopic pregnancy. In 75.5% (n = 77) of the cases, the index pregnancy was unplanned. The maximum gestational age at diagnosis of ectopic pregnancy was 10 weeks, whiles the minimum gestational age was 4 weeks. The mean gestational age at diagnosis of ectopic pregnancy was 7.2 ± 1.9 weeks. Approximately 94.2% (n = 98) of patients had previously visited a health facility before the visit at which the diagnosis was eventually made. These were referred cases. About 57.1% (n = 56) of that number had one previous visit, 19.4% (n = 19) had two, and 23 (23.5%) had three or more. The maximum number of previous visits was five. Approximately 65.4% (n = 68) of the patients with an

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ectopic pregnancy did not think they were pregnant when they first reported to the health facility. Two (1.9%) of the respondents were without symptoms and their ectopic pregnancy was detected by ultrasound.

Symptoms of ectopic pregnancy

In September, October and November 2015, the total number of ectopic pregnancies were 30, 38, and 36 — with unruptured ectopic pregnancies making up 0%, 13.1% (n = 5) and 5.6% (n = 2) respectively. The total number of ectopic pregnancies was 104, with 6.7% (n = 7) unruptured. The commonest presenting symptoms were amenorrhoea and lower abdominal pain, which were each present in 91.3% (n = 95) of patients, followed by irregular bleeding (47.1%, n = 49), and collapse with loss of consciousness (27.9%, n = 29). About 3.8% of patients (n = 4) had dizziness, while 1% (n = 1) had diarrhoea (Table 3). From the study, 53.4% (n = 55) of the cases reported to the hospital two or more days after the onset of their symptoms, whiles 32% (n = 33) reported a week or more after. The maximum duration of symptoms before reporting to the hospital was 42 days, whiles the minimum was a day. The median duration of symptoms was 2 days.

Clinical findings

The most common finding was abdominal paracentesis/ culdocentesis positive for non-clotting blood, which occurred in 65.4% (n = 68) of patients. Guarding (8.3%, n = 19) and demonstrable free fluid (8.3%, n = 19) in the abdomen were the least common finding (Table 4). Of the 97 ruptured ectopic pregnancies, 36.1% (n = 35) had tachycardia (pulse rate greater than 100 beats per minute). The median pulse rate was 100 beats per minute, with 17.5% (n = 17) of the cases being reported in a hypotensive state (blood pressure < 90/60 mmHg). About 77.0% (n = 80) of the ectopic cases ruptured at diagnosis, 15.4% (n = 16) were leaking, and 6.7% (n = 7) were diagnosed unruptured. There was one case of heterotopic pregnancy,

Table 1. Socio-demographic characteristics of study population (n = 104)

Sociodemographic Characteristics	Frequency (%)
Age in years	
<15	0(0)
15-24	20(19.2)
25-34	66(63.5)
35-44	18(17.3)
>44	0(0.0)
Mean age	28.9(SD5.31)
Residence	
Urban	83(79.8)
Rural	21(20.2)
Marital status	
Married	54(51.9)
Single	40 (38.5)
Cohabiting	10 (9.6)
Widowed	0 (0.0)
Educational level	
No formal education	8 (7.8)
Primary	7 (6.9)
JHS	32 (31.4)
SHS	30 (28.8)
Tertiary	27 (26.5)
Occupation of respondent	N=104
Professional/office worker	10 (9.6)
Artisan	26 (25.0)
Trader/Business person	48 (46.2)
Others	5 (4.8)
Unemployed	15 (14.4)
Religion	N=104
Christian	98 (94.2)
Muslim	6 (5.8)
Registration with NHIS	N=104
Yes	64 (61.5)
No	40 (38.5)

JHS, Junior High School; SHS, senior High School; NHIS, National Health Insurance Scheme; %, percentage

Table 2. Obstetrics and gynaecological history of respondents

Characteristics	Frequency (%)
Parity (n = 104)	
P0	45 (43.3)
P1	21 (20.2)
P2	21 (20.0)
P3	10 (9.6)
P4+	7 (6.7)
Previous Induced abortion (n = 104)	
Yes	59 (56.7)
No	45 (43.3)
Age in years of sexual debut ((n = 101)	
<15	4 (4.0)
15-19	50 (49.5)
20-24	44 (43.5)
25-29	3 (3.0)
History of previous ectopic pregnancy (n = 104)	
Yes	5 (4.8)
No	99 (95.2)
History of infertility	N=102
Yes	9 (8.8)
No	93 (91.2)
History of contraceptive use (n = 100)	
Yes	45 (43.3)
No	55 (52.9)
Number of lifetime sexual partners (n = 103)	
1	19 (18.4)
2	37 (35.9)
≥ 3	47 (45.6)
Treatment for sexually transmitted disease (n = 104)	
Yes	10 (9.6)
No	94 (90.4)
History of laparotomy (n = 104)	
Yes	37 (35.6)
No	67 (64.4)

P, Parity; %, percentage

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constituting about 1% of the cases with the tubal pregnancy ruptured. All patients had urine pregnancy tests positive. Approximately 98.1% (n = 102) the patients had laparotomy, while 1.9% (n = 2) were treated medically. Of those who had laparotomy, 88.2% (n = 90) had salpingectomy, 9.8% (n =10) had wedge resection and 2% (n = 2) had salpingo-oophorectomy. Fifty-seven (54.8%) of the ectopic pregnancies involved the right fallopian tube, and 45.2% (n = 47) involved the left fallopian tube. The most common region of the tube involved was the ampullary region at 69.2% (n = 72), followed by the fimbrial (15.4%, n = 16), interstitial (12.5%, n = 13) and the isthmic (2.9%, n = 3) regions. The maximum time from diagnosis to surgery was 7 hours 56 minutes, whiles the minimum was 10 minutes. The mean time from diagnosis to surgery was 196.2 ± 107.2 minutes. The maximum haemoperitoneum recorded in this study was 4000 mL, and the minimum was 200 mL, with a mean haemoperitoneum of 1424.5 ± 925.0 mL. In 83.3% (n = 85) of patients, no adhesions were found, 3.9% (n = 4) had filmy adhesions, while 13.7% (n = 13) had dense adhesions. About 81.4% (n = 83) of the 102 surgical specimens were subjected to histopathological examination. Of this number, 33.7% (n = 22) were reported as showing evidence of pelvic inflammatory disease. Also, 79.8% (n = 83) patients were transfused with whole blood, 12.0% (n = 10) were transfused with a unit of blood each, 68.7% (n = 57) with two units, 4.8% (n = 4) with three units, 13.3%(n = 11) with four units, and 1.2% (n = 1) with five units of whole blood. The mean number of units of whole blood transfused was 2.0 ± 0.87.

Table 3. Symptoms experienced by women diagnosed with ectopic pregnancy

Symptoms	Number (%)
Amenorrhoea	95 (91.3)
Lower abdominal pains	95 (91.3)
Irregular bleeding per vaginam	49 (47.1)
Loss of consciousness	29 (27.9)
Diarrhoea	1 (1)
Dizziness	4 (3.8)

%, percentage

Table 4. Clinical findings on reporting to Korle-Bu Teaching Hospital

Signs	Frequency (%)
Pallor	62 (62.6)
Abdominal distension	31 (29.8)
Rebound tenderness	60 (57.7)
Guarding	19 (18.3)
Demonstrable free fluid in the abdomen	19 (18.3)
Cervical excitation tenderness	33 (31.7)
Adnexal mass on examination	25 (24.0)
Abdominal paracentesis/culdocentesis positive for non-clotting blood	68 (65.4)

%, percentage

DISCUSSION

The finding that ectopic pregnancy constituted 8.81% of gynaecological emergencies is lower than the 48.5% reported by Anorlu et al. in a study on risk factors for ectopic pregnancy in Lagos Nigeria [11]. The proportion of gynaecological emergencies made up of ectopic pregnancies found in the Nigerian study was about five times that of this study. The difference could be because the study by Anorlu et al. was a case-control study and included patients from different levels of healthcare, including tertiary health facilities, while this present study was cross-sectional and limited to a tertiary facility. In this study, ectopic pregnancies constituted 12.40% of gynaecological admissions. However, ectopic pregnancies constituting 4.5% and 4.1% of gynaecological admissions have been reported by Lawani et al. [4] and Panti et al. [5], respectively, from two Teaching Hospitals in Nigeria. This study's percentage of admissions contributed by ectopic pregnancies is about three times those reported in Nigerian studies. Therefore, the burden of ectopic gestations on hospital beds in our centre is higher. However, the proportion of ectopic pregnancies diagnosed unruptured is increasing over time.

A study in our centre between 1991 and 1993 reported a proportion of 1.9%, while between 2000 and 2003 it reported a proportion of 5.43%. In the present study, 6.73% of ectopic pregnancies were diagnosed unruptured. This may be due to increased availability and access to high-resolution ultrasound scans with high sensitivity over the period. This is encouraging as unruptured ectopic pregnancies are associated with lower morbidity and mortality as well as a shorter period of hospital stay. In this study, the maximum duration of symptoms before a case of ectopic gestation reported at the hospital was 42 days, whiles the minimum was a day. This finding is similar to that of Baffoe et al., who found the duration of symptoms to be between 1 and 42 days [10]. About two-and-a-half decades after Baffoe's study, the duration of symptoms of ectopic pregnancy before diagnosis has not changed. This suggests that public health education for behavioural change needs to be strengthened. From this study, patients with amenorrhoea, irregular vaginal bleeding and lower abdominal pain should be targeted for exclusion of ectopic pregnancy. This information can be echoed in mass media and as part of continuous medical or professional education. Panti et al. reported a detection rate of 29.9% of unruptured ectopic pregnancies in Nigeria [5]. This is about four times the detection rate from this study. Because Nigeria is in Sub-Saharan Africa and has comparable sociodemographic characteristics as Ghana, the findings suggest that considerably more effort must be invested towards detecting ectopic pregnancies while they are unruptured. The detection of 6.73% of unruptured ectopic pregnancies is extremely low compared to the 88 - 100%

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recorded in developed countries [12-14]. This difference may be attributable to a greater proportion of the populace in developed countries with formal education, early reporting to the hospital when women miss their periods and readily available and accessible high-resolution ultrasound scans for diagnosing ectopic pregnancies very early. In the present study, only about 55% of the population of women with ectopic pregnancies had had formal senior high education and beyond. The majority of ectopic pregnancies in this study were recorded in the fallopian tube, in agreement with what is known [6,15] more than what was observed in a previous study at the same hospital [10]. Of these, the majority occurred in the right fallopian tube. This right fallopian tube site preponderance may be attributed to recurrent subclinical appendicitis with consequent salpingitis of the right fallopian tube

Most (69%) of the ectopic pregnancies occurred in the ampullary region, followed by the fimbrial end of the fallopian tube (15%) and the interstitial region (13%) Baffoe et al. found that the majority of ectopic pregnancies occurred in the ampullary region of the fallopian tube, but the order of occurrence in other tubal locations was at variance with that recorded in this study. They found the cornual region to be the next commonest site as opposed to the fimbrial portion found in this study [10]. Panti and his colleagues in Sokoto, Nigeria, also found the most common site of tubal ectopic pregnancy to be ampullary, followed by isthmic, cornual and fimbrial locations [5]. The average volume of haemoperitoneum recorded in this study was 1.42 litres, similar to the 1.37 litres found by Baffoe et al. This high volume of haemoperitoneum indicates that ruptured ectopic pregnancies are reported late to the hospital. The maximum duration of symptoms before a case of ectopic gestation reported at the hospital was 42 days, whiles the minimum was a day. This, coupled with delays within the facility, may account for the haemoperitoneum recorded. The average time from diagnosis to surgery recorded in this study was 196.24 minutes. Considering that ectopic pregnancies, especially when ruptured, would require emergency surgery, efforts should be made to reduce this interval period.

Baffoe et al. found in their study that 36.8% of the cases of ectopic pregnancy presented were in shock [10]. Panti et al. also recorded 34.1% of ectopic pregnancies who came in shock [5]. Considering that only 17.0% of the cases in this current study were reported in a hypotensive state, the proportion of ectopic pregnancies that presented in shock was less than those found in the earlier studies. Since the average duration of symptoms before reporting to the hospital has remained the same, it may be a reflection of aggressive resuscitation from referral sites since about 94% of the cases were referred. As many as 64.5% of the patients did not know they were pregnant at the time of diagnosis. This study showed that 91% of the patients had missed their period. It means that most women are not reporting for medical checkups when they miss their periods and also do not use urine pregnancy tests at home to check for possible pregnancy when they miss their periods. This is a target for intervention and could help in the early diagnosis of unruptured ectopic pregnancy. Women should be educated in the mass media about the need to have urine pregnancy tests done when they miss their periods and also about the need to report early to the hospital for the localisation of their pregnancies. About 47.1% (n = 49) of the women had irregular vaginal bleeding, and this could confuse such women and make it difficult for them to realise they had missed their period. In addition, most women did not appreciate the significance of irregular vaginal bleeding following the missed period, especially when most of them also had lower abdominal pain. Therefore, it was not surprising that most cases were diagnosed after rupture.

An average of 2 units of haemotransfusion in this study is similar to the finding of Obed [16] but more than the 0.5 units recorded by Baffoe et al. [10]. About 98% of the ectopic pregnancies had laparotomies, with predominantly salpingectomies being done. In Obed's study, between 1st January 2000 and 31st December 2003, the percentage of unruptured ectopic gestations was 5.4%, but there was no medical management. There was no therapeutic laparoscopy done during the study period despite its advantage of less intraoperative blood loss, shorter operation time and hospital stay [17]. This is attributable to the fact that many of the patients came in with a compromised haemodynamic state. Therapeutic laparoscopy is also in its early stages of development at the gynaecology unit of the Korle Bu Teaching Hospital. It is hoped that it will become the mainstay of management in future. This study's results show a slight increase in the use of medical intervention for the management of unruptured ectopic pregnancy compared to Obed's study. This tends to reduce the morbidity and mortality associated with surgical interventions and save the fallopian tubes of such patients to enhance future fertility. The percentage of ectopic pregnancies that received medical therapy was less than the 3.8% reported by Panti et al. [5]. This difference could be because fewer unruptured ectopic pregnancies were diagnosed in this study.

Conclusion

The incidence of ruptured ectopic pregnancies in the KBTH was high, with very low detection rates of unruptured ectopic gestations. Ruptured ectopic pregnancies were mainly managed by laparotomy. Primary health care practitioners should rule out ectopic pregnancy in women of the reproductive age group who present with the triad of amenorrhoea, lower abdominal pain and irregular vaginal bleeding. There should be continuous education of women and their partners to report early to health facilities when the women miss their periods for early localisation of the pregnancies. Future studies should be carried out over a longer period to remove the possibility of seasonal bias regarding the incidence of ectopic pregnancies.

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DECLARATIONS

Ethical considerations

Ethical approval for the study was obtained from the Ethical and Protocol Review Committee of the College of Health Sciences (Clearance Number: MS-Et/m.11-p3.4/2014-2015). Permission was also obtained from the Department of Obstetrics and Gynaecology of the Korle-Bu Teaching Hospital to carry out the study in the department. The purpose of the study, the benefits and rights of the subjects and the procedure involved were explained to the participants, and informed consent was obtained.

Consent to publish

All authors agreed to the content of the final paper.

Funding

None

Competing Interests

No potential conflict of interest was reported by the authors.

Author contributions

KAO designed and conducted this study with support from KM, SO, JS and KN. Data analysis and interpretation were done by KAO, KM, JS, SO, DKA and KN. The manuscript was drafted by KAO and DKA and reviewed for intellectual content by KM, KN, SO and JS. All authors read and approved the final version of the manuscript.

Availability of data

Data is available upon request to the corresponding author.

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