Ectopic pregnancy at a teaching hospital, Nigeria: an analysis of presentation and risk factors
Collins E. M. Okoror, Benjamin O. Uhunmwangho, Osayomore Idemudia

Introduction
Ectopic pregnancy, a pregnancy in which the fertilised ovum implants in any location other than the endometrial lining of the uterus [1,2], is a common life-threatening emergency in pregnancy and the leading cause of pregnancy-related deaths in the first trimester [3,4]. Ninety-seven percent of ectopic pregnancies occur in the fallopian tube, with others occurring in the abdominal cavity, ovary, and cervix [2]. It is an important cause of maternal morbidity and mortality, especially in developing countries, where a majority of the patients tend to present late with ruptured form and haemodynamic instability. The incidence of ectopic pregnancy varies from country to country and within the same geographical region, depending on the risk factors in the population concerned. In the UK, it is said to occur at the rate of 11 cases per 1000 pregnancies [5] and at 19.7 cases per 1000 pregnancies in North America [6]. In Nigeria, it occurs at a rate of 1.1–3.8% of deliveries [7–11]. The incidence of ectopic pregnancy has been on the increase in the last few decades. This perceived increase in incidence may be a true reflection of the larger number of cases in the population due to increase in pelvic infection from sexually transmitted infections (STIs) and postabortal sepsis/puerperal sepsis or a result of the increase in the facility for diagnostic tests for ectopic pregnancy [12]. A study by Uzoho et al. [13] in Aminu Kano Teaching hospital found that 46.7% of the 117 cases of ectopic pregnancies were identified to have a history of previous induced miscarriage. In this study, pelvic adhesions were found intraoperatively in 42.1% of the patients despite no previous surgery, suggesting a prevalence of pelvic infections. Lawani et al. [14], in his work, reported a history of induced miscarriage and pelvic inflammatory disease in 51.2 and 43.4%, respectively, of the cases studied.

The diagnosis of ectopic pregnancy is complicated by the wide spectrum of clinical presentations, from....
asymptomatic (especially in early unruptured cases) to acute abdomen and haemodynamic shock. Cases of unruptured ectopic pregnancies are increasingly being seen due to routine ultrasound scan for other reasons. The classic symptom triad of lower abdominal pain, amenorrhoea, and vaginal bleeding is present in only about 50% of patients and is most typical in patients in whom an ectopic pregnancy has ruptured. Abdominal pain is the most common presenting complaint, as reported by Lawani et al. [14] and Gharoro et al. [15] in their study, wherein 80 and 83.6%, respectively, of cases studied presented with abdominal pain, but the severity and nature of the pain vary widely.

The importance of ectopic pregnancy in developing countries and Nigeria, in particular, lies in the fact that, while the trend of early diagnosis and conservative treatment is prevalent in developed countries, we are still challenged by late presentations with the ruptured form of the ectopic pregnancy in more than 80% of cases [16]. Ectopic pregnancies are frequently confused with other conditions such as ovarian cyst, pelvic inflammatory disease and spontaneous abortion; early diagnosis and treatment of this condition reduces maternal morbidity and mortality [17]. The identification of risk factors, symptoms and signs leads to more efficient management of this condition [18].

The aim of this study was to determine the pattern of presentation and risk factors of ectopic pregnancy at a tertiary hospital in Nigeria.

Patients and methods
This is a 5-year retrospective study of all the cases of ectopic pregnancy admitted and managed between 1 January 2009 and 31 December 2013.

Inclusion criteria
All cases of ectopic pregnancy managed between 1 January 2009 and 31 December 2013 at the hospital were included in this study.

Exclusion criteria
Cases with incomplete data or missing case notes were excluded from the analysis.

Data collection and analysis
The number of cases managed during the period of review was obtained from records at the accident and emergency department, gynaecology emergency room, and gynaecology ward and theatres. Relevant data were obtained from case notes and included sociodemographic characteristics, risk factors and mode of presentation. Case notes were extracted from the accident and emergency department, and gynaecology ward and theatre. The gynaecological admissions and records of the total births within the period were also retrieved from the medical records as well as the theatre and appropriate wards.

The data were checked for completeness and analysis carried out using WinPepi version 11.65 (Abramson JH, Jerusalem, Israel: 2016). Descriptive statistics was carried out and results presented in frequency tables and chart.

The approval of the obstetrics and gynaecology department of the hospital was sought to retrieve and utilise the information in the case notes for this study.

Results
Over the 5-year period, there were a total of 121 cases of ectopic pregnancy, 14 150 deliveries and 3719 gynaecological admissions, giving an incidence of 0.86% of all deliveries and 3.25% of all gynaecological admissions. Only 115 case notes were available for review, and analysis was carried out on the basis of these available case notes.

The ages ranged from 17 to 39 years, with a mean age of 28.57 years. The majority of women were in the age group of 25–29 years, which accounted for 28.70% of cases. The parity was determined on the basis of number of pregnancies that the woman had carried up to the age of viability. Nulliparous women accounted for 31 (26.96%) cases and grand multiparous 19 (16.52%). However, the multiparous patients were the largest, accounting for 65 (56.52%) of the cases. Eighty-four (73.04%) patients were married at the time of the ectopic pregnancy, while 30 (26.09%) patients were single (Table 1).

<table>
<thead>
<tr>
<th>Table 1 Sociodemographic characteristics of the patients</th>
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<tbody>
<tr>
<td>Variables</td>
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</tr>
<tr>
<td>Age (years)</td>
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<tr>
<td>&lt;20</td>
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<tr>
<td>20–24</td>
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<tr>
<td>25–29</td>
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<td>30–34</td>
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<td>≥35</td>
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<tr>
<td>Parity</td>
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<td>0</td>
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<td>1-4</td>
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<td>≥5</td>
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<tr>
<td>Marital status</td>
</tr>
<tr>
<td>Single</td>
</tr>
<tr>
<td>Married</td>
</tr>
<tr>
<td>Divorced</td>
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</table>
Previous miscarriage (spontaneous/induced) was found in 79 (68.70%) of the patients, accounting for the highest identified risk factor. This was followed by pelvic infection, which was found in 55 (47.83%) patients. Other identified risk factors included advanced age in 26 (22.61%), previous pelvic/abdominal surgery in 13 (11.30%), prior history of infertility in seven (6.09%) and history of IUCD use in five (4.35%). Up to 26 (22.61%) patients had no identifiable risk factors. Eight of the patients had previous ectopic gestation; hence, there was a recurrence rate of 6.96% (Fig. 1).

The clinical presentations of the patients during the period under review were extremely variable. Up to 102 (88.70%) patients presented with abdominal pain, 99 (86.09%) with amenorrhoea, while 52 (45.22%) patients presented with bleeding per vaginam. However, only 47% of patients presented with the classic triad of amenorrhoea, abdominal pain and bleeding per vaginam. In 13 (11.30%) patients, there was no clinical feature; the diagnosis of ectopic gestation was made during an ultrasound examination for pregnancy confirmation and foetal viability, and these were unruptured ectopic pregnancies (Table 2).

### Table 2 Clinical presentation of ectopic pregnancy

<table>
<thead>
<tr>
<th>Variables</th>
<th>n (%)</th>
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<tr>
<td>Lower abdominal pain</td>
<td>102 (88.70)</td>
</tr>
<tr>
<td>Amenorrhoea</td>
<td>99 (86.09)</td>
</tr>
<tr>
<td>Bleeding per vaginam</td>
<td>52 (45.22)</td>
</tr>
<tr>
<td>Dizziness/fainting spells</td>
<td>48 (41.74)</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>24 (20.87)</td>
</tr>
<tr>
<td>Shock</td>
<td>15 (13.04)</td>
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<tr>
<td>Abdominal swelling</td>
<td>11 (9.57)</td>
</tr>
</tbody>
</table>
| Incidental finding on USS        | 13 (11.30)     | *NB, some patients had multiple clinical features, USS, ultrasound scan.

### Discussion

Ectopic pregnancy still constitutes a major gynaecological emergency. The incidence of 0.86% in this study shows a downward trend in the incidence of ectopic pregnancy in our centre when compared with 1.68% in a previous study by Gharoro et al. [15]; this could be attributed to the increase in total deliveries. The incidence is, however, lower than rates reported from most other centres in Nigeria [8–11]. The highest incidence of ectopic pregnancy was recorded in the age group of 25–29 years in this study, with a mean age of 28.57 years, which is similar to reports from Kaduna [19] and Nnewi [7]. This can be because this is the peak age of reproduction, and hence most cases presented at that time. The incidence of ectopic pregnancy was highest among multiparous women, which was in conformity with earlier work by Oronsaye and Odiase [20]. This may be because of accumulated risk factors such as previous unsafe abortions for unintended pregnancies and puerperal infections, which subsequently predisposes them to have an ectopic gestation in future pregnancies. This is obvious, as miscarriages (spontaneous/induced) and pelvic infection made up the highest percentage of identifiable risk factors in this study. This is, however, in contrast with findings from some other Nigerian health institutions, where low parity was found to constitute a high-risk group [21] and a previous observation by Gharoro et al. [15]. A previous history of miscarriage and pelvic infection were the major risk factors present in 68.70 and 44.35% of patients, respectively, in this study. This is similar to previous works from some other part of the country by Lawani et al. [14] and Uzoho et al. [13] and that by Malik et al. [22] in India. This could be related to the risky sexual behaviour common in this part of the world, as well as sepsis following unsafe miscarriages, as induced miscarriage for social reasons in Nigeria is illegal and mostly clandestine. The implication of this could be tubal damage and then scarring, which obstructs the embryo transport and consequent tubal implantation. About one-fourth (22.61%) of patients in this study did not have any identifiable associated risk factor. It is evident that there may not be any tubal damage in many cases of ectopic pregnancy. In these women, the cause of ectopic pregnancy may be a dysfunction in the tubal smooth muscle activity [12]. Embryonic abnormalities have also been implicated in the attempt to explain the occurrence of ectopic pregnancy in the absence of tubal pathology [12]. An ectopic pregnancy could present with diverse symptoms, as shown in this study. Abdominal pain and vaginal bleeding were the most common presenting symptoms, and these are similar to previous findings [20,22–24]. The abdominal pain, which is due to peritoneal irritation is not unusual,
as most of the patients presented with ruptured ectopic pregnancy, unlike in the developed countries where the unruptured cases are more common [25]. Abdominal pain, however, is usually a late feature in the clinical presentation of ectopic pregnancy [12,23]. The pain could be caused by tubal miscarriage and bleeding through the fimbrial end of the tube into the peritoneal cavity [12]. The pain could vary in intensity and usually does not necessarily reflect the volume of blood lost inside the abdominal cavity [12]. Vaginal bleeding was observed in 45.22% of patients with ectopic pregnancy, which is similar to other studies in Nigeria [26]. However, some studies have shown that about 10–20% of ectopic pregnancies may present without vaginal bleeding [27]. There are no specific symptoms or signs that are pathognomonic for ectopic pregnancy, and many disorders such as threatened or incomplete miscarriage, ovarian torsion, gastroenteritis and appendicitis may mimic its presentation [28]; hence a high index of suspicion is required. This study was retrospective in nature with some limitations such as inaccuracy of case notes and relying solely on these data within the case notes. A prospective study will thus be necessary to validate the findings in this study.

### Conclusion

Ectopic pregnancy has remained an important gynaecological condition in our centre. Although several risk factors for ectopic pregnancy are known, the cause of a large proportion of ectopic pregnancies remains unknown. A high index of suspicion and use of modern diagnostic techniques will assist in early diagnosis, obviating the morbidity and need for radical treatment. An early transvaginal ultrasound should be offered to all women at the early trimester for early diagnosis and possible medical treatment. A high prevalence of STIs and unsafe abortions result in high incidence of ectopic pregnancy. Prevention should be aimed at health education and liberal use of contraceptives. Efforts also should be geared at the promotion of family planning and prompt diagnosis/adequate treatment of pelvic infections to help to reduce the ectopic pregnancy rate in our environment.

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### Conflicts of interest

There are no conflicts of interest.

### References