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Original Research Article

Epidemiological patterns and clinical presentations of ectopic pregnancy in a tertiary hospital: a prospective observational study

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ABSTRACT

Background: Ectopic pregnancy is a potentially life-threatening condition where a fertilized egg implants outside the uterus, most commonly in the fallopian tubes. It poses significant risks to the health and well-being of women of reproductive age. This study aims to explore the epidemiological patterns, clinical presentations, and risk factors associated with ectopic pregnancy in a tertiary hospital setting.
Methods: This prospective observational study was conducted at the Department of Obstetrics and Gynaecology, Rajshahi Medical College Hospital, Rajshahi, from January 2014 to June 2014. A total of 45 patients were selected as study subjects by purposive sampling technique. Statistical analysis was carried out by using the statistical package for social sciences (SPSS) version 16.0 for Windows.
Results: The study found that most ectopic pregnancy patients were aged 21-25 years, with 93.3% having ruptured ectopic pregnancies. A majority (60.0%) had 6-8 weeks of amenorrhea, and 46.7% had one prior pregnancy. Common symptoms included abdominal pain, amenorrhea, shock, and per vaginal bleeding, with abdominal pain present in all cases. Acute presentations, such as massive hemorrhage and cardiovascular collapse, were seen in 57.78%, while 35.56% had acute-on-chronic symptoms. Clinical signs often included abdominal tenderness, distention, and a positive cervical excitation test.
Conclusions: The study highlights the significant burden of ectopic pregnancy among women of reproductive age, particularly those between 21 and 30 years. The majority of cases were ruptured (93.3%), often presenting as acute emergencies with massive intraperitoneal hemorrhage and cardiovascular collapse. Abdominal pain was a universal symptom, while vaginal bleeding was present in most ruptured cases. Clinical findings commonly included abdominal tenderness, cervical excitation, and abdominal distension.

Keywords: Epidemiological pattern, Ectopic pregnancy, Clinical presentation, Fallopian tube

INTRODUCTION

The word ectopic means out of place. Ectopic pregnancy is defined as any intra or extra-uterine pregnancy in which the fertilized ovum implants at an aberrant site that is conducive to its growth and development.[1] More than 95% of ectopic pregnancies occur in the fallopian tube.[2] When twinning occurs, there may be simultaneous intra-uterine and extra uterine (heteroectopic) and simultaneous bilateral tubal pregnancy. Ectopic pregnancy was first described in the 11th century and until the middle of the 18th century, it was usually fatal. The first successful operation of ectopic pregnancy was performed in 1883 by Lawson Tait of Birmingham.[3] At the beginning of the 20th

century, great improvements in anesthesia, antibiotics, and blood transfusion contributed to the decrease in the maternal mortality rate. The incidence of ectopic pregnancy varies from place to place even in the same country. The incidence varies greatly throughout the world ranging from 1 in 28 to 1 in 300.[4] In a multi-centric case-control study in this subcontinent (ICMR Task Force project, 1990), the incidence of ectopic pregnancy was 3.12 per 1,000 pregnancies or 3.86 per 1,000 live births.[5] It remains the leading cause of pregnancy-related death during the first trimester where it is responsible for 9-10% of all maternal deaths. Ectopic pregnancy occurs in approximately 2% of all pregnancies.[6] Its incidence is maximum in age is >30 years.[7] One of the largest risk factors is upper genital tract infection due to sexually transmitted diseases (STDs), particularly Chlamydia trachomatis, and as much as 20% of ectopic pregnancy can be attributed to smoking.[8-10] Previous use of intrauterine device (IUD) appears to slightly increase the risk.[10,11] Women who had one ectopic pregnancy are likely to have 17-fold increased risk of having an ectopic pregnancy in our country; unsafe abortion leading to pelvic infection is the main reason to occur ectopic pregnancy.[12] The risk of ectopic pregnancy is 10 times higher in areas with a high incidence of illegal abortion and 6 times higher following clinical salpingitis. According to a study, ectopic pregnancy is more likely after postpartum tubal ligation because an edematous congested friable tube increases the chance of incomplete occlusion.[13] The classic clinical trial of ectopic pregnancy is pain, amenorrhoea, and vaginal bleeding. Unfortunately, only 50% of patients present typically. 40-50% present with vaginal bleeding, 50% have a palpable mass in adnexal region and 75% may have abdominal tenderness. Approximately 20% of patient present in unstable hemodynamic condition and is highly suggestive of rupture ectopic pregnancy.[14] Diagnosis of ectopic pregnancy mostly depends upon proper history taking and accurate physical examination. The presence of known risk factor can increase suspicion but any sexually active women presenting with abdominal pain and vaginal bleeding after a period of amenorrhoea is an ectopic pregnancy until proved otherwise. The early detection of ectopic pregnancy has been done by USG (TVS), serial β-hCG, measurement of serum progesterone, direct vision by laparoscopy and uterine curettage. TVS with β-hCG monitoring are standard for evaluation of suspected pregnancy.[15] This study aimed to assess epidemiological patterns and clinical presentations of ectopic pregnancy in a tertiary hospital.

METHODS

This prospective observational study was conducted at the Department of Obstetrics and Gynaecology, Rajshahi Medical College Hospital, Rajshahi, from January 2014 to June 2014. The patients who were clinically suspicious of ectopic pregnancy were considered as the study population. A total of 45 patients were selected as study subjects by purposive sampling technique. Data were collected from selected patients after obtaining informed consent, following a pre-tested questionnaire. A detailed history was taken, and a thorough clinical examination was performed. Investigations included hemoglobin percentage (Hb%), blood grouping and Rh typing, urine pregnancy test, serum β-hCG, and ultrasonography (USG) of the lower abdomen. Additional special investigations were conducted as per the patient's presentation. Statistical analysis was carried out by using the statistical package for social sciences version 16.0 for Windows (SPSS Inc., Chicago, Illinois, USA). The mean values were calculated for continuous variables. Informed consent was taken from each patient. Ethical clearance was obtained from the Institutional Review Board.

Inclusion criteria

Patients with clinically suspicious of ectopic pregnancy, and clinically suspicious of ectopic pregnancy also supported by a positive urinary pregnancy test, serum β-hCG and USG reveal no intrauterine gestational sac were included.

Exclusion criteria

All patients who presented with early pregnancy bleeding not consistent with the diagnosis of ectopic pregnancy were excluded.

RESULTS

Table 1 presents the age distribution of the 45 patients diagnosed with ectopic pregnancy. The majority of patients (40.0%) were in the 21-25 years age group, followed by 33.3% in the 26-30 years group. Patients aged ≤20 years accounted for 17.8%, while 6.7% were in the 31-35 years group. Only 2.2% of patients were older than 35 years, indicating that ectopic pregnancy was more prevalent among younger women, particularly those between 21 and 30 years.

Table 1: Age distribution of the study patients with ectopic pregnancy (n=45).

Age group (years)	Number	Percentage
≤20	8	17.8
21-25	18	40.0
26-30	15	33.3
31-35	3	6.7
>35	1	2.2

Table 2 illustrates the distribution of ectopic pregnancy types among the 45 study patients. The majority of cases (93.3%) were ruptured ectopic pregnancies, while only 6.7% were unruptured.

Table 3 shows the distribution of the period of amenorrhea among the 45 patients with ectopic pregnancy. The majority (60.0%) had a history of 6-8 weeks of amenorrhea, followed by 17.8% with 8-10 weeks and

13.3% with more than 10 weeks of amenorrhea. Notably, 8.9% of patients did not report a history of amenorrhea but presented with early pregnancy signs and irregular vaginal bleeding.

Table 2: Distribution of the type of ectopic pregnancy of the study patients (n=45).

Type of ectopic pregnancy	Number	Percentage
Unruptured	3	6.7
Ruptured	42	93.3

Table 3: Distribution of period of amenorrhoea associated with ectopic pregnancy (n=45).

Period of amenorrhoea (weeks)	Number	Percentage
6-8	27	60.0
8-10	8	17.8
>10	6	13.3
No H/O amenorrhoea, only early pregnancy sign symptoms with irregular P/V bleeding	4	8.9

Table 4 presents the distribution of parity among the 45 patients with ectopic pregnancy. The highest proportion (46.7%) of cases was observed in women with parity 1, followed by 35.6% in nulliparous women (parity=0). Patients with parity 2 and 3 accounted for 8.9% and 6.7%, respectively, while only 2.2% had a parity of more than 4.

Table 4: Distribution of relation of parity with ectopic pregnancy (n=45).

Number of parity	Number	Percentage
0	16	35.6
1	21	46.7
2	4	8.9
3	3	6.7
>4	1	2.2

Table 5 illustrates the presenting symptoms of ectopic pregnancy among the 45 study patients. The most common presentation, observed in 40.0% of cases, included a history of amenorrhea, abdominal pain, pregnancy symptoms, shock, syncopal attacks, and per vaginal (P/V) bleeding. Another 6.67% of patients exhibited similar symptoms but without syncopal attacks. A total of 15.55% of patients presented with amenorrhea, abdominal pain, pregnancy symptoms, and P/V bleeding, while 28.89% had only amenorrhea and abdominal pain. Additionally, 8.89% of patients reported abdominal pain with P/V bleeding but without a history of amenorrhea.

Table 6 demonstrates the correlation between abdominal pain, per vaginal (P/V) bleeding, and the type of ectopic pregnancy (ruptured vs. unruptured) among the 45 study patients. Abdominal pain was a universal symptom, present in all cases (100%) of both ruptured and unruptured ectopic pregnancies. P/V bleeding was observed in 68.89% of ruptured cases, whereas only 2.22% of unruptured cases exhibited this symptom. Conversely, 24.45% of ruptured ectopic pregnancies and 4.44% of unruptured cases did not present with P/V bleeding.

Table 5: Presenting symptoms of ectopic pregnancy (n=45).

Symptoms	Number	Percentage
H/O amenorrhoea + abdominal pain + pregnancy sign and symptoms + shock + syncopal attack + P/V bleeding	18	40
H/O amenorrhoea + abdominal pain + pregnancy sign and symptoms + shock + P/V bleeding	03	6.67
H/O amenorrhoea + abdominal pain + pregnancy sign and symptoms + P/V bleeding	07	15.55
H/O amenorrhoea + abdominal pain	13	28.89
Abdominal pain + P/V bleeding	04	8.89

Table 6: Correlation of abdominal pain and per vaginal bleeding status with ectopic pregnancy (both ruptured and unruptured) (n=45).

Pain status	Ruptured (n=42)		Unruptured (n=3)	
	N	**%**	**N**	**%**
Pain	42	100.0	3	100.0
No pain	0	0.0	0	0.0
Pervaginal bleeding				
Present	31	68.89	1	2.22
Absent	11	24.45	2	4.44

Table 7 presents the distribution of the clinical presentation of ectopic pregnancy among the study patients. The majority (57.78%) presented acutely with massive intraperitoneal hemorrhage and cardiovascular collapse. An acute-on-chronic presentation, characterized by irregular vaginal bleeding, fainting attacks, painless vaginal bleeding, or vaginal bleeding with abdominal pain and occasional passage of a decidual cast, was observed in 35.56% of cases. Additionally, 6.66% of patients were diagnosed in the early pregnancy stage without any specific signs or symptoms of ectopic pregnancy.

Table 8 presents the distribution of clinical findings among the 45 patients with ectopic pregnancy. The most common clinical presentation, observed in 51.1% of cases, included

abdominal tenderness, abdominal distension, and a positive cervical excitation test. Another 31.1% of patients had abdominal tenderness with a positive cervical excitation test, while 8.9% exhibited abdominal tenderness along with muscle guarding and a positive cervical excitation test. Additionally, 8.9% of cases presented with abdominal tenderness and an abdominal lump.

Table 7: Distribution of mode of clinical presentation of ectopic pregnancy (n=45).

Presentation	Number	Percentage
Acute		
Massive intraperitoneal hemorrhage with cardiovascular collapse	26	57.78
Acute on chronic		
Irregular vaginal bleeding with fainting attack	16	35.56
Painless vaginal bleeding		
Vaginal bleeding with abdominal pain and occasional passage of decidual cast		
Early pregnancy without sign symptoms of ectopic pregnancy	3	6.66

Table 8: Distribution of clinical findings of ectopic pregnancy (n=45).

Signs	Number	Percentage
Abdominal tenderness + abdominal distention + cervical excitation test +ve	23	51.10
Abdominal tenderness + muscle guard + cervical excitation test +ve	4	8.9
Abdominal tenderness + cervical excitation test +ve	14	31.10
Abdominal tenderness + abdominal lump	4	8.9

DISCUSSION

In this study, out of 45 cases, 93.3% were ruptured ectopic pregnancies who came to the hospital with acute or acute or chronic presentations. The remaining 6.7% were unruptured ectopic pregnancies. The peak age of ectopic pregnancy in this study was 21-25 years and the prevalence is about 40.0% and next peak is 26-30 years and the prevalence is 33.3%. The mean±SD age of the patients was 26.2±5.8 years and the median age was 26 years. The range of ectopic pregnancy varies from 18-40 years. Aydogmus et al reported that the median age of patients with the diagnosis of ectopic pregnancy was 30.1 years.[16] Abbas and Karim observed that all patients presented in their study were between 25 and 30 years of age except 2, one was 35 and the other was 40 years old.[17] Panchal et al reported that the peak incidence (71.66%) of ectopic pregnancy was in the age group of 21-30 years, which may be due to this period being the maximum fertile period and the use of contraception being infrequent and occasional.[18] Another study by Aziz showed that the risk of ectopic increases progressively with increasing age.[19] The mean age of women was 30±4 years and only 7% (n=5) were more than 40 years old. The current study also showed that 8.9% were more than 35 years old with the highest age being 40 years. Bouyer et al study showed that age plays an important role and increases the possibility of exposure to other risk factors.[20] Aging may result in progressive loss of myoelectrical activity along the fallopian tubes. Age-related changes in tubal function and tubal diverticula which increases with age, predisposes patients to ectopic pregnancy.[21] In this study, it was observed that 27 (60.0%) patients had a history of amenorrhoea for 6-8 weeks. Only 8.9% of patients had no history of amenorrhoea but early pregnancy sign symptoms were present with irregular P/V bleeding. More than 10 weeks of amenorrhoea were present in 13.3% of patients. The mean duration of amenorrhoea was 11 weeks varied from 6 to 13 weeks. Karki et al reported that mean gestational age was 6 weeks and 20% of the cases had no history of amenorrhoea.[22] Duration of amenorrhoea (weeks) was divided into four groups in this study and found that among the cases of ruptured ectopic pregnancy, 24 (53.33%) had a history of amenorrhoea for 6–8 weeks, 8 (17.78%) had >8–10 weeks, 6 (13.33%) had >10 weeks and 4 (8.89%) patients had no amenorrhoea but early pregnancy sign symptoms were present. 3 cases with unruptured ectopic pregnancy had 6–8 weeks amenorrhoea. Study by Goksedef showed that patients with ruptured ectopic pregnancies were more frequent at 6-8 weeks and >8 weeks of gestational age compared to <6 weeks of gestational age (42.0%, 47.7%, and 10.2%) respectively.[23] In this study, it was found that 35.6% of patients were nulliparous. The peak incidence was among the patients who had delivered 1 child (46.7%). Incidence is gradually decreasing with increasing parity. Incidence is low (8%) in patients having four or more children (para ≥4). Karki et al reported that the majority (80%) of patients were parity whereas primi parity was 7.5%.[18] A study done by Aziz showed that twenty-four percent were primigravida and multiparous women found to be more prone to ectopic pregnancy were 64%.[19] In this study, all the cases of ectopic pregnancy and all patients had abdominal pain (100.0%) and most patients had a history of amenorrhoea 41 (91.1%), 32 (71.1%) had p/v bleeding, 28 (62.22%) had pregnancy sing and symptoms, 21 (46.7%) had shock and 18 (40.0%) had a syncopal attack. Karki et al reported that abdominal pain (97.5%), vaginal bleeding (62.5%), and syncopal attacks (12.5%) were the most frequent presenting complaints.[18] 80% had amenorrhea. 20% had a history of regular cycles and 17.5% had vomiting. Similarly, Shrestha and Saha found pain abdomen 100%, amenorrhoea 80.0% and per vaginal bleeding 75.0%.[24] The above findings are consistent with the current study. In this study, all (100.0%) of the ectopic pregnancy had abdominal tenderness, 41 (91.1%) had cervical excitation test +ve, 23 (51.10%) had abdominal

distention, 4 (8.9%) had lower abdominal pain with muscle guard and 4 (8.9%) had abdominal lump. In a study by Dart et al an adnexal mass was present in less than 10% of patients with diagnosed ectopic pregnancy which was very close to the present study results.[25] In this study, adnexal lump was present in chronic ectopic and acute on chronic presentation.

Limitations

The study was conducted in a single hospital in Rajshahi city, which may limit the generalizability of the findings to the entire country. Additionally, the short duration of the study posed a constraint in data collection and analysis. Another limitation was the small sample size, which may not fully represent the broader population. Therefore, future studies with a larger sample size and a more extended study period are recommended to provide a more comprehensive understanding.

CONCLUSION

The study highlights the significant burden of ectopic pregnancy among women of reproductive age, particularly those between 21 and 30 years. The majority of cases were ruptured (93.3%), often presenting as acute emergencies with massive intraperitoneal hemorrhage and cardiovascular collapse. Abdominal pain was a universal symptom, while vaginal bleeding was present in most ruptured cases. Clinical findings commonly included abdominal tenderness, cervical excitation, and abdominal distension. These results emphasize the importance of early diagnosis and timely intervention to prevent life-threatening complications associated with ectopic pregnancy.

Recommendations

It is crucial to identify the risk factors associated with ectopic pregnancy and implement appropriate measures to reduce its incidence. Doctors should maintain a high index of suspicion when a woman of reproductive age presents with abdominal pain, vaginal bleeding, and signs of shock, as these symptoms may mimic acute or subacute abdominal conditions. Early recognition and timely intervention are key to improving patient outcomes and preventing life-threatening complications associated with ectopic pregnancy.

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