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Indian Journal of Obstetrics and Gynecology Research

Journal homepage: www.ijogr.org

Original Research Article

Risk factors, clinical presentation and management of ectopic pregnancy in a rural tertiary care centre- An observational study

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ARTICLE INFO

Article history:
Received 11-03-2021
Accepted 18-03-2021
Available online 25-08-2021

Keywords:
Ectopic pregnancy
Surgical intervention

ABSTRACT

Context: Ectopic pregnancy is a challenging and life-threatening emergency, which can cause significant maternal morbidity and mortality. The present study aims at determining the risk factors, clinical features at presentation, diagnostic tools, management modalities and outcome of ectopic pregnancies in a tertiary care teaching hospital.

Settings and Design: This was an observational study of 90 cases of ectopic pregnancies admitted to the Department of Obstetrics and Gynaecology at a tertiary care teaching hospital from February 2019 to August 2020. Relevant data of the 90 patients was tabulated and descriptive analysis was done.

Statistical Analysis used: Chi square and Fischer exact test

Results: Majority of the patients belonged to 21-30 yrs age group. Maximum number of cases (57%) had a history of previous abdomino pelvic surgery. The predominant symptom was amenorrhea (96.6%) and classical triad of amenorrhea, bleeding per vagina and abdominal pain was seen in 30% of the study population. Majority of the patients i.e 76.7% underwent surgical intervention.

Conclusions: Most common age group at presentation is 21-30years. History of previous abdominal surgery being the most important risk factor whereas amenorrhea was the most common symptom. Surgical intervention was the main mode of management in ruptured ectopic pregnancy.

1. Introduction

Implantation of a fertilised ovum outside the normal uterine cavity is called ectopic pregnancy.[1] Of all the recognised pregnancies, the incidence of ectopic pregnancy is 2% approximately.[2] Fallopian tube is the most commonest location for ectopic pregnancy (95%). In Fallopian tube, most common site is the ampulla, followed by isthmus, infundibulum and interstitium.[3] Other less common sites are abdomen, ovary and cervix.[4] Ectopic pregnancy is the most common life threatening emergency which can lead to maternal death. Increase in incidence of pelvic inflammatory disease, smoking in reproductive age group women, previous abdominal surgeries and the use of assisted reproductive techniques are the various risk factors for ectopic pregnancy.[5]

The clinical triad of ectopic pregnancy includes amenorrhoea, abdominal pain and bleeding per vagina. Other symptoms include haemorrhagic shock, passage of fleshy casts, fever and vomiting.[6] The early diagnosis of ectopic pregnancy is due to improvement in non invasive techniques like transvaginal sonography and pregnancy tests in urine and serum.[7] The clinical presentation of ectopic pregnancy has changed from life threatening disease requiring emergency surgery to a benign condition and in asymptomatic women nonsurgical treatment options are available now.

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https://doi.org/10.18231/j.ijogr.2021.064

As ectopic pregnancy has variable presentations from asymptomatic to life threatening conditions, the aim of this study is to determine the risk factors, clinical presentations and study the management modalities and outcome, so as to make recommendations on interventions to reduce the morbidity of this condition.

2. Materials and Methods

This was an observational study that was conducted in a tertiary care centre after the approval of ethics committee between January 2019 to May 2020. Sample size calculated was 72. Inclusion criteria was all diagnosed cases of ectopic pregnancy. All suspected cases of intrauterine pregnancies and pregnancy of unknown location were excluded from the study. Ninety women with ectopic pregnancy who fulfilled the inclusion criteria and who were willing to participate in the study were recruited. Patients giving history of symptoms suggestive of ectopic pregnancy were subjected to urine pregnancy test and transvaginal ultrasound examination. Patients with positive urine pregnancy test without any intrauterine gestational sac were diagnosed as ectopic pregnancy based on USG features of adnexal mass and/or intraperitoneal free fluid suggestive of haemoperitoneum and were included in the study. Patients with positive urine pregnancy test who didn't have such features in ultrasound were labelled as cases of pregnancy of unknown location and were kept under observation with serial beta hCG values and transvaginal ultrasound. Subsequent appearance of intrauterine gestational sac lead to exclusion of those patients and the remaining were diagnosed as cases of ectopic pregnancy and were included in the study group.

Parameters like age, blood group, parity, history of previous ectopic pregnancy, previous abdominal surgery, history of dilatation and curettage, pelvic inflammatory disease, usage of intrauterine device were studied. Symptoms like bleeding per vagina, amenorrhea, pain abdomen and shock were studied. Quantitative variables were analysed using mean, standard deviation and independent T test. Qualitative variables were analysed as percentage and using chi square test.

3. Results

In this study out of 90 patients majority belonged to age group of 21-30 years.65 patients (72%) were less than and 25(27.7%) patients were more than 30years of age. Majority i.e 32 (35.6%) were second gravidae. Only one patient was sixth gravida (1.1%). Majority i.e. 54(60%) had a parity of 1-2 and only 6(6.6%) patients had parity more than 4. 35(38.8%) patients were O positive and only 6(6.8%) patients had negative blood group.

Regarding risk factors, majority of patients 52(57.7%) had history of previous abdominal surgery, 2 patients (2.2%) had history of tuberculosis and 1 patient (1.1%) had history of intrauterine contraceptive device insertion. Previous ectopic pregnancy was seen in 4 patients (4.4%). Assisted reproduction techniques were seen in 9 patients (10%). 20 patients (22.2%) did not have any risk factors. 16 patients of this study i.e 17.7% were sterilised. 3 to 4 risk factors were seen in one patient hence total percentage was not counted to 100 percent. (Table 1)

Coming to clinical presentation, the symptom of amenorrhea was seen in majority of cases i.e 87 patients (96.6%). Shoulder tip pain was present in 2 (2.2%) and vomiting in 20 (22.2%) patients respectively. The classical triad of symptoms of amenorrhea, pain abdomen and bleeding per vaginum were seen in 27 (29.9%) patients only. (Table 2) Abdominal tenderness was seen in 49 patients (54.4%), fornicial tenderness in 33 patients (36.6%) and cervical motion tenderness in 23 patients (25.5%) whereas 16 patients (17.7%) did not have any signs. (Table 3)

In the present study 27 patients i.e (30%) had beta hCG values between 1000 to 2000 and 3 had values more than 30,000 i.e (3.3%). 25 patients i.e 27.7% had serum beta hCG values less than thousand. Ultrasonography showed free fluid in POD in majority of patients i.e (71.1%) and adnexal mass in 45 patients (50%). (Table 4)

Regarding management and it's outcome, 69 (76.6%) were managed surgically and 13 patients (14.4%) were medically managed. For 8 patients (8.8%) expectant management was done. 2 patients who were managed medically later needed surgical intervention. Patients with haemoperitoneum who needed blood transfusion were 21(23.3%).

Table 1: Risk factors

Risk factors	No.	Percentage
Previous abdominal surgery	52	57.7
Spontaneous abortion	9	10
ART	9	10
Infertility	8	8.8
Previous ectopic pregnancy	4	4.4
Dilatation and curettage	7	7.7
TB	2	2.2
Nil	20	22.2

Table 2: Symptoms

Symptoms	No.	Percentage
Amenorrhea	87	96.6
Pain abdomen	73	81.1
Bleeding pv	53	58.8
Syncope	7	7.7
Vomiting	20	22.2
Passage of clots	9	10
Fever	2	2.2
Shoulder tip pain	2	2.2

Table 3: Signs

Signs	No.	Percentage
Nil	16	17.7
Abdominal tenderness	49	54.4
Fullness in fornix	13	14.4
Tenderness in fornix	33	36.6
Adnexal mass	1	1.1
Abdominal distension	4	4.4
Abdominal mass	1	1.1
Cervical motion tenderness	23	25.5

Table 4: USG findings

USG	No.	Percentage
Normal	2	2.2
Free fluid in POD	64	71.1
Adnexal mass	45	50
Gestational sac	17	18.8
Cardiac activity	4	4.4

4. Discussion

The present study was done in 90 patients diagnosed as ectopic pregnancy. Analysis of risk factors, clinical presentation and management was done. Majority (71.1%) were in the age group 21-30years.In the study done by Tay et al., the incidence of ectopic pregnancy was more in the age group of greater than 35 years which was similar to the studies done by Gracia et al.[8,9]

Regarding risk factors, significant incidence of prolonged infertility and its relationship to ectopic pregnancy has been observed by several authors. According to studies by Rose et al., Hillis et al. and Savitha Devi et al., a positive history of infertility was present in 2.9%, 48.07% and 15.1% respectively.[10–12] Primary infertility was also reported as a significant risk factor - 11.2% in the study by Kathpalia et al. and 21% by Priyadarshini et al.[13,14]

The first IVF pregnancy was tubal ectopic pregnancy.[15] According to Maymon R et al. assisted reproductive technology (ART) was reported to elevate the risk of extra uterine pregnancy from 0.025% to 1% in women who have undergone IVF.[16] According to studies conducted by Tay et al., ectopic pregnancy was seen in 4% patients after ART.[8] In studies done by Sivalingam et al. IVF was associated with 2-5% of ectopic pregnancy.[2] In the present study also, ectopic pregnancy was seen in 9 patients who conceived after ART i.e 10%.

Literature shows that pelvic inflammatory disease (PID) is an important factor predisposing to the development of ectopic pregnancy. In our study no patient had history of episodes of acute PID, which is in contrast to the study done by Akande V et al where PID was linked to 30-50% of all ectopic pregnancies where Chlamydia trachomatis was the most common causative organism.[17] According to studies by Hillis et al, Savitha Devi et al and Rose et al, the incidence of PID as a risk factor was 4, 25 and 34.4% respectively.[10–12] However, in the present study history of pulmonary tuberculosis was seen in 2 patients i.e 2.2%, and we could not rule out the possibility of co existing genital tuberculosis. Genital TB was responsible for 13.2% of all cases of ectopic pregnancy in the study conducted by Sharma et al.[18]

In the study by Butt et al., risk factor of previous surgeries was seen in 2-13% cases of patients with ectopic gestation.[19] In our study, a majority of 52 (57.7%) patients had history of previous abdominal surgeries.

According to Bouyer et al., the odds ratio for having ectopic pregnancy was 12.5 after one and 76.6 after previous two ectopic pregnancies.[20] In the study by Barnhart et al, the recurrence rate of ectopic pregnancy was 5-25%.[7] In this study of 90 patients, history of previous ectopic pregnancy was seen in 4 i.e 4.4%. A history of dilation and curettage has been associated with subsequent ectopic pregnancy in nearly 70% of cases according to study done by Panelli et al. whereas in the present study it was seen in only 7 patients i.e 7.7%.[21]

An intrauterine contraceptive device (IUCD) is the most significant risk factor, accounting for 57% to 90% of patients with ectopic pregnancy according to Sotelo et al.[22] According to Marion et al. and Benagiano et al., in women with IUCD who became pregnant, 50% of such cases were ectopic.[23,24] However, in the present study, IUCD insertion history was present in only 1 patient.

Regarding clinical symptoms and signs, in studies conducted by Tay et al, 97% patients had abdominal pain, 79% had vaginal bleeding, 91% of patients had abdominal and 54% had adnexal tenderness.[8] In a descriptive cross sectional study done in Abbottabad, 6675 patients were studied and 65 were found to be having ectopic pregnancies. Amenorrhea abdominal pain and vaginal bleeding were seen in 66.6%, 62.2% and 40% patients respectively.[25] In the present study, 73 patients (81.1%) had abdominal pain, 53 (58.8%) had vaginal bleeding, 49 (54.4%) had abdominal tenderness and 33 (36.6%) had adnexal tenderness. Classical triad of amenorrhoea, abdominal pain and bleeding per vaginum was found in 53.84% cases in the study by Rajendra Wakankar et al. which is comparable to that done by Singh et al. (60%). In the present study the triad was seen in 30% of cases.[26,27]

In studies conducted by Henderson et al. 26 patients (9%) had no bleeding per vaginum which is in contrast to this study where 58% patients had the same.[28] Cervical motion tenderness was reported in 67% of cases by Sivalingam et al. whereas it was seen in 25% of cases in this study.[2] 22.2% had vomiting in the present study whereas Arora et al. showed 31% cases with vomiting.[29] One-third of women with ectopic pregnancy had no clinical signs and 9% had no symptoms according to studies done by Alkatout et al. and Moore et al.[30,31] In this study 17% had no clinical signs

suggestive of ectopic pregnancy.

In the study done by Kirk et al., 75% of tubal pregnancies were diagnosed during the first trans vaginal ultrasound.[32] Study conducted by Crochet et al revealed that 88% had adnexal mass with absent intrauterine gestational sac. In the present study, adnexal mass was seen in 45 (50%) patients.

In study done by Jennifer Y Hsu et al. among 62,588 women with ectopic pregnancy 49,090 women (78.4%) underwent surgery and 13,498 women (21.6%) received medical management with methotrexate.[33]

In the present study also, a majority of 69 patients (76%) underwent surgery and 13 patients (14%) received medical management.

A meta-analysis showed success rates of 93% for multi-dose and 88% for single dose regimen according to Sivalingam et al.[2] In the present study we followed single dose regimen for medical management. A randomised controlled trial done by VanMello et al. compared expectant management with the administration of a single dose of methotrexate and found that no significant difference existed between the two groups.[34] In study by Moini et al. 2 patients who were managed expectantly required surgical intervention later similar to our study.[35]

5. Conclusion

Among patients who presented with ectopic gestation, majority belonged to the age group of 21-30years(71.1%). Regarding risk factors, history of previous abdominal surgery was the most important one i.e 52 cases (57.7%). Amenorrhea was the most common symptom and abdominal tenderness the commonest sign being present in 96.6% and 54.4% patients respectively. Free fluid in pouch of Douglas was the commonest finding (71.1%) in ultrasonogram. Surgical intervention was the main mode of management in 69(76.7%) patients since majority presented with ruptured ectopic with haemoperitoneum 42(46.7%). Medical management with methotrexate was successful in 84.6% cases (11 out of 13 cases) and expectant management in 8 cases.

6. Source of Funding

None.

7. Conflict of Interest

The authors declare that there is no conflict of interest.

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Cite this article: Saketha LN, John LB, Rathod S. Risk factors, clinical presentation and management of ectopic pregnancy in a rural tertiary care centre- An observational study. *Indian J Obstet Gynecol Res* 2021;8(3):296-300.