Ectopic Pregnancy- Study of Incidence, Risk Factors, Clinical Presentation, and Associated Morbidity in Tertiary Centre

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ABSTRACT

BACKGROUND

Ectopic pregnancy is one of the commonest acute abdominal emergencies a gynaecologist has to meet in the day-to-day practice. It is also a matter of great concern that a woman might have to face any time during her child bearing period. It not only threatens the life if not treated effectively in a timely manner, but also tells upon her fertility. Many pathological conditions present a percentage of variables but only few have greater disparity of symptoms, signs, opinions, and reports as ectopic, which has made ectopic pregnancy both an interesting and challenging problem, at times difficult to diagnose and manage. The objective of this study is to determine incidence, risk factors, clinical presentation and associated morbidity of ectopic pregnancy.

METHODS

The cross-sectional study was carried out in the Department of Gynaecology and Obstetrics of Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar. The study period was two years from March 2017 to February 2019. A total of 52 cases of ectopic pregnancies were studied for risk factors, clinical presentation and associated morbidity during the period of study.

RESULTS

The incidence of ectopic pregnancies is 1:114. The maximum number of ectopic gestations in the present series occurred between the age group 26 to 30 years and more in nulliparous and in the first and second gravidas. Majority of cases belonged to the low socioeconomic status. In the study, no risk factors were identified in 30.7% of the cases and various other risk factors were studied in remaining cases. The typical triad of amenorrhea, pain abdomen and bleeding were observed in 74.5% cases. Most of the patients were referred from outside with diagnosis of ruptured ectopic pregnancy, so treatment modality was surgical- laparoscopic unilateral salpingectomy in 71.1% cases. No morbidity or mortality were seen in the present study.

CONCLUSIONS

High index of suspicion is required in women in reproductive age group with lower abdomen pain irrespective of presence or absence of amenorrhea, whether or not she has undergone sterilisation to offer a conservative line of management in case of early diagnosis of ectopic pregnancy.

KEY WORDS

Ectopic Pregnancy, Incidence, Risk Factors, Clinical Presentation, Morbidity
BACKGROUND

Ectopic pregnancy is one of the commonest acute abdominal emergencies a gynaecologist has to meet in the day-to-day practice. It is also a matter of great concern that a woman might have to face any time during her child bearing period. It not only threatens the life if not treated timely and effectively but also tells upon her fertility. The term ectopic is more comprehensive than extra uterine or tubal pregnancy for it embraces all varieties of gestation outside the uterine cavity, includes fallopian tube, ovarian pregnancy, angular pregnancy, pregnancy in a rudimentary uterine horn, abdominal pregnancy, cervical pregnancy, heterotopic pregnancy, caesarean scar pregnancy. Many pathological conditions present a percentage of variables but only few have greater disparity of symptoms, signs, opinions, and reports as ectopic, which has made ectopic pregnancy both an interesting and challenging problem at times difficult to diagnose and manage.

METHODS

This cross-sectional study was carried out in the department of Gynaecology and Obstetrics of Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar. The study period was two years from March 2017 to February 2019. Sample size taken was 5928 by convenience sampling technique. Ethics approval was taken from institutional ethics committee. All patients with history suggestive of ectopic pregnancy and in whom diagnosis was confirmed by clinical acumen, ultrasound. Statistical analysis with SPSS software was done.

Inclusion Criteria
The women who were diagnosed as ectopic pregnancy, who were in reproductive age group, of 15-44 years.

Exclusion Criteria
All intrauterine pregnancies

On admission, history of the patient was taken in which the following points were noted -
1. Name, age, address, occupation and social status.
2. History of amenorrhea whether present or not.
3. History of pain abdomen acute or vague.
4. History of vaginal bleeding if present, duration and nature.
5. Any attacks of syncope or vomiting.
6. Urinary or rectal symptoms, dysuria or retention.
7. History of fever or untoward symptoms like backache or any other discomfort.
8. History of shoulder pain if present.
9. Menstrual history - menarche, menstrual period, cycle pattern, duration of flow, dysmenorrhea, last menstrual period.
10. Obstetrical history - number of conceptions, number of full-term deliveries, date of last child birth, nature of deliveries, puerperium, number of abortions, if any, date of last abortion.
11. History of previous ectopic pregnancy, if present, detailed record.

RESULTS

Total number of deliveries in obstetrics and gynaecology department in Chalmeda Anand Rao Institute of Medical Sciences during this study period were 5928. Total number of ectopic pregnancies during this period of study were 52. Therefore, the incidence of ectopic pregnancies being 1:114 (Table 1)

| Diagnosis         | Number of Cases |
|-------------------|-----------------|
| Ectopic pregnancy| 52              |
| Number of pregnancies | 5928           |
| Incidences        | 1:114           |

Table 1. No. of Cases

| Age Group | No. of Cases | Percentage |
|-----------|--------------|------------|
| 15-20     | 6            | 11.5       |
| 21-25     | 19           | 36.5       |
| 26-30     | 22           | 42.3       |
| 31-35     | 4            | 7.6        |
| 36-40     | 1            | 1.9        |
| Total     | 52           | 100        |

Table 2. Age Group Relation to Ectopic Pregnancy
Table 2 and 3 above shows that the maximum number of ectopic gestations in the present series occurred between the age group 26 to 30 years; the youngest age was 19 years and the oldest was 40 years. The maximum incidence occurred among the nulliparous and in the first and second gravidas. Shows majority of cases belonged to the low socioeconomic status and only 17.3% belonged to medium socioeconomic status and none of them belonged to the high socioeconomic status. Table 5 shows that there were no risk factors identified in 30.7% of the cases, 19.2% of the patients had undergone procedures like dilatation and curettage, 5.7% used OCPS, 1.9% used IUCD, 13.4% had PID who underwent treatment with antibiotics, 9.6% had infertility of more than 4 years, 3.8% had previous ectopic pregnancies. Majority of the patients had an amnulatory pregnancy and 44% had isthmal pregnancy.

Histology
The anatomic arrangement of the tubal musculature [Hortsman 19521] has described distinct layers of musculatures-
- a. Sub peritoneal layer, which runs a longitudinal course along the tube.
- b. A middle vasomotor layer whose fibers parallel the vessels encircling the tube.
- c. An inner layer arranged in spirals, which originate from different directions and intersect at regular intervals.

Functions of the Fallopian Tube
The regulatory mechanism concerned in the three-day retention of the ovum within the oviduct and the environment provided by the oviduct for the zygote during the interval are still the worthy subjects for continued investigation.

Fertilization
Fertilization of the ovum occurs in the ampulla of the uterine tube. One spermatozoon pierces the zona pellucida and enters the ovum for the first 7 days does not increase in the overall size. The morula, which is a clump of cells-0.13 mm in diameter by the third or fourth day. The morula still covered by zona pellucida. The trophoblasts have the capacity to burrow into other cells with which they come into contact. It is thus prevented from sticking to the tubal epithelium by zona pellucida which disappears on reaching the uterine lumen.

Aetiology of Tubal Pregnancy
1. Conditions which Retard Passage of the Fertilized Ovum:
   - a. Pelvic Inflammatory Disease: It is the commonest cause of ectopic gestation. Endosalpingitis causes desquamation of the epithelium with loss of Cilia. Exosalpingitis gives rise to peritubal adhesions, which restrict the peristaltic movements of the tube. According to ACOG (1998), prior PID, especially that caused by Chlamydia Trachomatis is the most common risk factor. Halbrecht, Vago and Stallworthy observed a high incidence of ectopic pregnancy following treatment of tuberculous salpingitis.
   - b. Congenital Anomalies: Such as diverticula, accessory ostia and atresia of the tube may distort the lumen.
   - c. Tumours: Small myomas at the junction of the tube and uterus can obstruct the passage of fertilized egg (Allport 1845) or by mucus polyp (Breslau 1863).
Other intraluminal lesions are tubal dermoid cyst (Zelinger).

d. Psychologic Causes Including Spasm: Tubal motility is regulated by autonomic nervous system, neuro-endocrine imbalance might lead to tubal dyskinesia.

e. Surgical Obstruction: Previous operations such as restoring patency or occasionally deliberate attempt to disrupt continuity (tubal ligation, partial resection or fulguration) can give rise to ectopic pregnancy

f. Intrauterine Contraceptive Device (IUCD): Prevalence of 21% of ectopic pregnancies in Progestasert users against 2.5 % in other IUCD users. This may be due to altered hormonal environment. An increased incidence of ectopic pregnancy has been reported with the use of IUD with and without progesterone.

g. Hormonal Contraception: An increased incidence of ectopic pregnancy has been reported with the use of progesterin only contraceptives and after use of postovulatory high-dose oestrogens to prevent pregnancy the "morning after pill.

h. Assisted Reproductive Techniques: Tubal pregnancy is increased following Gamete Intrafallopian transfer (GIFT) and Invitro fertilization. Chen and associates reported 11 ectopic gestations following 1014 IVF cycles, and 3 of 11 were cornual implantations similarly extratubal as well as heterotopic tubal pregnancies are also increased after these procedures, Berliner and associates described a triplet heterotopic pregnancy following ovulation induction and intrauterine insemination. Abdominal pregnancy has been reported following GIFT and IVF12. Cervical pregnancy may be increased after invitro fertilization. Finally, ovarian pregnancy also may be increased after IVF14.

i. Others: After one previous ectopic pregnancy, the chance of another is 7-15%. Peritubal adhesions subsequent to postabortal or puerperal infection, appendicitis or endometriosis may cause tubal kinking and narrowing of the lumen. These may be associated with the slightly increased risk of ectopic pregnancy following previous induced abortion. Finally, previous caesarean delivery has been linked to a small increased ectopic pregnancy risk. The rate of tubal pregnancy has also been reported to be significantly increased, in women with Luteal Phase Defects, with cigarette smoking, and with vaginal douching.

2. Conditions which Increase Tubal Receptivity: Rubin et al noted endometrium in the lumina of the intrauterine portion of the tube in a few cases of ectopic pregnancy. Factors intrinsic in the conceptus-

a. Transmigration of the Ovum: Delay in the passage of fertilized egg has been proposed as a possible cause of extra uterine gestation.

b. Delayed Ovulation: Iffy suggested that abnormal implantation caused by delayed ovulation suppress the next menstrual period and the reflux flow of the menstruum washes the ovum from the uterus back into tube.

c. Fetal Sex, Sperm and Ovum Abnormalities: Certain studies of fetal sex and tubal pregnancy suggested that, abnormally high percentage were male.

Pathological Anatomy

Although tubal implantation follows a similar pattern to that recognized in the uterine cavity, the difference in decidual response in the tube modifies the invasiveness of the trophoblast. Moreover, ampulla is also the site for fertilization.

Occurrence of Decidua in the Tube and Later Course

In the tubal variety, the decidua basalis is either absent or poorly developed and the decidua Vera and the decidua capsularis are essentially not existent.

Uterine Changes

In a study out of 1125 women with a proven ectopic pregnancy, 75% had a normal sized uterus. Thus, lack of uterine changes does not exclude an ectopic pregnancy

Behaviour of Uterine Mucosa

If extra uterine pregnancy continues without interruption, uterine decidua exhibits same features as decidua vera of intrauterine pregnancy with absence of thinning and atrophy.

Arias Stella Reaction

In 1954, Javier Arias-Stella described typical histological changes in the endometrium, marked cellular atypism and mitotic activity occur with extreme glandular proliferation. Cells are vacuolated and foamy with enlarged and hyper chromatic nuclei and bizarre variation in nuclear shape. In some places there are syncytiun-like formation of glands with definite loss of cellular polarity. Ectopic pregnancy incidence after assisted reproductive technology has decreased over time, but factors such as multiple embryo transfer increase the risk of ectopic pregnancy. In case of pelvic inflammatory disease many cases of chlamydia salpingitis are indolent, cases may go unrecognized causing tubal damage and subsequent tubal pregnancy. Recent change in sex life can cause pelvic inflammation and tubal damage in younger age groups causing more incidence of ectopic pregnancy in young, nulliparous or low parity woman. Further induced abortions increase the incidence of pelvic infections which cause scarring within the fallopian tubes. The scar tissue interferes with the motility or flexibility. The presence of post abortion pelvic inflammatory disease is predictive of a greater likelihood of an ectopic pregnancy in the future. In case of history of previous ectopic pregnancy, according to Jeffcoates there is risk which is 15 times greater than the normal woman. Since tubal disease a nearly always bilateral there is a strong tendency for ectopic pregnancy to occur first on one side and then on the other side. The classical signs like amenorrhea (82.10%), pain abdomen (88.40%), bleeding (53.8%), others (13.4%) were in accordance to the study by Shiv Kumar. As most of the patients were referred from outside with the diagnosis of ruptured ectopic pregnancy, so treatment modality was mainly surgical. Newer techniques like laparoscopic surgery have bought era of conservative surgical management. In this institute 86.4% were managed by laparoscopic unilateral salpingectomy which is similar to study done by Shradhha Shetty. No post-operative morbidity features like wound infection, DIC, renal failure, septicemia, pulmonary oedema, was seen in any case. No maternal mortality was seen.
CONCLUSIONS

There is an increase in the incidence of ectopic pregnancies but decrease in maternal mortality due the advent of TVS scan and beta hCG diagnosis; but the paradox being that most of the patients are being managed as surgical emergencies as they are brought with the diagnosis of ruptured ectopic pregnancy. High index of suspicion is required in women in reproductive age group with lower abdomen pain irrespective of presence or absence of amenorrhea, whether or not she has undergone sterilisation to offer a conservative line of management.

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