Association of Risk Factors of Ectopic Pregnancy

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Abstract:

Background: Ectopic pregnancy is the implantation of a fertilized ovum anywhere outside the uterine cavity. Around 95% of ectopic pregnancies occur in the Fallopian tubes. Most of these are occurring in the ampulla region. Other sites include the interstitial or the corneal region of the myometrium, cervix, ovary, peritoneal cavity (abdominal pregnancy) and in caesarean section scars. The objective of this study was to see the association of different risk factors of ectopic pregnancy.

Methodology: It was a case-control study. The data was collected from Obstetrics & Gynaecology department Jinnah Hospital, Lahore and the study was completed at Gulab Devi PGMI, Lahore. For the analysis of data, SPSS version 16.00 was used.

Results: 180 pregnant females were taken in which 90 were cases and 90 were controls. 16 females were more than 35 years in age of which 16% females had ectopic pregnancy. There were 3 females had history of smoking in which 3% females had ectopic pregnancy. There were 82 females who had history of pelvic surgery in which 43% female had ectopic pregnancy. There were 17 females have had history of previous ectopic pregnancy of which 14% were having ectopic pregnancy. There were 6 females have had history of IUCD (Intra uterine contraceptive device) of which 6% females were having ectopic pregnancy. There were 23 females who had history of PID (Pelvic inflammatory disease) of which 26% females were having ectopic pregnancy. There were 2 females have had history of tubal disease and had ectopic pregnancy. There were 21 females who had history of ART (Assisted reproductive technique) in which 3% females were presented with ectopic pregnancy. There was 1 female who had history of endometriosis in which 2% females were presented with ectopic pregnancy. There were 16 females have had history of low socioeconomic status of which 9% females were presented with ectopic pregnancy. There was 1 female who had history of tuberculosis and having ectopic pregnancy.

Conclusion: In the present study age more than 35 years, smoking, previous ectopic pregnancy, insertion of IUCD, PID, assisted reproductive technique, tubal disease, history of pelvic surgery, endometriosis and tuberculosis had a great association with ectopic pregnancy.

Key words: Ectopic pregnancy, risk factors.

Introduction: Ectopic pregnancy is derived from a Greek word "ektopos" which means out of place. Ectopic pregnancy, the implantation of fertilized ovum outside the endometrial cavity and potentially life threatening situation (1). EP is the result of implantation of a fertilized ovum in a location other than the endometrium of uterus, most commonly occurring in the ampulla of fallopian tubes, which often lead to tubal rupture. EP

remains the leading cause of death in first trimester (2).

The prevalence of ectopic pregnancy is 11 per 1000 pregnancies in UK (3).4 to 10 % of all pregnancy related maternal deaths are due to ectopic pregnancy , despite of improved in diagnostic methods (4). 9% of all pregnancy related deaths are due to ectopic pregnancy. 97 % of all ectopic pregnancies occur in fallopian tube: 55 % in ampulla; 25 % in the isthmus; 17 % in the fimbria and 3 % in the abdominal cavity, ovary and cervix. (2)

There are more chances of sudden internal haemorrhage in isthmus and uterus so mostly mortality of tubal pregnancies occurs in these parts. In 2010 a review is published in which support the hypothesis that the cause of tubal ectopic pregnancy is combine phenomena of failure of embryo to transport from fallopian tube to uterus and occurrence of early implantation due to any change in fallopian tube (5).

Causes of ectopic pregnancy are pelvic inflammatory disease , use of IUCD , infertility , intrauterine surgery (e.g. D&C) , smoking , previous ectopic pregnancy, age over 35 years old , low socioeconomic status (6), endometrial/pelvic/genital tuberculosis (7)

Women suffering with ectopic pregnancy, 10 % have no symptoms and one third have no signs and it is difficult to differentiate signs of ectopic pregnancy from signs of genitourinary and gastrointestinal disorders like appendicitis, UTI and signs of rupture of corpus luteum cyst, miscarriage or ovarian tortion. Early signs of ectopic pregnancy are vaginal bleeding (it may be a spotting or heavy bleeding), abdominal pain (mostly it is absent but sometimes it is a late sign), nausea, vomiting, diarrhoea, abdominal tenderness and haemorrhagic shock**.** Ultrasonography is used to detect 90 % of ectopic pregnancies (8).

The purpose of this study was to know about the risk factors of ectopic pregnancy and the ratio of their presence in women.

Materials and methods

Study design: It was a case control study.

Setting: The data was collected from Obstetrics & gynaecology department Jinnah Hospital, Lahore and the study was completed at Gulab Devi, PGMI, Lahore.

Duration: The study was completed in 5 months.

Sample size: This study included 180 pregnant females. 90 were case and 90 were control.

Sampling technique: Non-probability convenient sampling was used.

Inclusion criteria: The women having ectopic pregnancy were taken as case while the women without ectopic pregnancy were taken as control. The pregnant females who presented in the hospital with vaginal bleeding, abdominal pain/or shock were diagnosed as having ectopic pregnancy through ultrasound were included in case. Ultrasound was conducted in the Radiology department of Jinnah hospital. Gestational age was also inquired from patient and confirmed through ultrasound.

Exclusion criteria: Pregnant females presented to emergency department with similar presentations of ectopic pregnancy but confirmed as miscarriage by physical examination and on ultrasound. Pregnant females who came only for their antenatal visit were also excluded from case. Pregnant females with incomplete data were excluded out due to failure to satisfy the inclusion criteria. Pregnant females who were reluctant to answer quires or refusing to be interviewed were excluded from the study. The medical and surgical history was

taken very carefully with special emphasis on known risk factors associated with ectopic pregnancy.

Data collection: A questionnaire was made to see the association of risk factors of ectopic pregnancy. Consent was taken from the pregnant females. All risk factors were included in the questionnaire; medical history, gynaecological history and obstetrics history were also included to evaluate completely.

Statistical analysis: For the analysis of data, SPSS version 16.00 was used. The qualitative data was presented in the form of graphs and tables along with its percentage. The quantitative data were presented in the form of mean, range and standard deviation by the simple descriptive analysis. The bar charts, pie charts and the cross tabulation was also given for the qualitative data. Histogram and box plot was also used for quantitative data.

Operational Definitions:

Case: The females had ectopic pregnancy were taken as case.

Control: The pregnant females who had not ectopic pregnancy taken as control.

IUCD: The insertion of inta uterine contraceptive device causing infection and adhesion in uterus which causing ectopic pregnancy.

PID: The pelvic inflammatory disease is the inflammation of pelvis.

ART: The assisted reproductive technique is techniques used to assist the reproduction.

Endometriosis: The occurrence of endometrial granular in various location in the pelvic cavity.

Results:

In this study data of 180 patients were taken in which 90 were case and 90 were control. Detail is given in Table (p value is .000).

Patients with age more than 35 years or less are shown in Table 2. Their **smoking history** is available in Table 3. The females with the **history of pelvic surgery** are shown in Table 4. Previous **history of ectopic pregnancy** of females is mentioned in Table 4. Detail of pregnant females showing **history of IUCD** is available in Table 5. **History of PID** in pregnant females, under study is shown in Table 6. The females having **history of tubal disease** are mentioned in Table 7. The **history of ART** in pregnant females is explained in Table 8 and Table shows the **history of Endometriosis** in pregnant females. Females with **low socioeconomic status** are mentioned in Table . There was 1 female who had **history of tuberculosis** in which 2% (1) females with ectopic pregnancy. There was significant association between history of tuberculosis and ectopic pregnancy, p value is less than .05 which shows association between history of tuberculosis and ectopic pregnancy. (Table 11)

Discussion:

Ectopic pregnancy is a pregnancy that occurs outside the uterine cavity. The objective of this study was to find risk factors of ectopic pregnancy. The prevalence of ectopic pregnancy is 11%. Ectopic pregnancy is related with high maternal mortality (3).

There are different risk factors which are associated with ectopic pregnancy. Our results are somehow different from western countries due to demographic difference. Ectopic pregnancy is prevalent and serious complication of early pregnancy.

In this study it was found that there is significant association between age of females more than 35 years and ectopic pregnancy. We also found in our study that

history of pelvic surgery has significant association with ectopic pregnancy. Bouyer et al has given the same results which support our study (9).

The present study showed that there is association between smoking and ectopic pregnancy. A review is published in which Handler et al also found association between smoking and ectopic pregnancy in his study (10), there is great association between IUCD and ectopic pregnancy, association between prior abortion, tubal disease and PID with ectopic pregnancy. (Fernandez H, et al), association of same risk factors with ectopic pregnancy in his study (11).

According to this study, assisted reproductive technique, low socioeconomic status, tuberculosis, endometriosis and previous history of ectopic pregnancy have association with ectopic pregnancy. (Beral V et al) also conduct same study and found same results (12).

Conclusion:

In this study age more than 35 years, smoking, previous ectopic pregnancy, insertion of IUCD, PID, assisted reproductive technique, tubal disease, history of pelvic surgery, endometriosis and tuberculosis had a great association in causing ectopic pregnancy.

References:

1. Jeani Chang LDE-E, Cynthia J. Berg, Joy Herndon, Lisa Flowers, Kristi A. Seed, Carla J. Syverson. Pregnancy-Related Mortality Surveillance --- United States, 1991--1999. Morbidity and Mortality Weekly Report. 2003;52:1-8.
2. Anderson FW, Hogan JG, Ansbacher R. Sudden death: ectopic pregnancy mortality. Obstetrics & Gynecology. 2004;103(6):1218-23.
3. Wilkinson H. Saving mothers' lives. Reviewing maternal deaths to make motherhood safer: 2006–2008. BJOG: An International Journal of Obstetrics & Gynaecology. 2011;118(11):1402-3.
4. Fylstra DL. Tubal pregnancy: a review of current diagnosis and treatment. Obstetrical & gynecological survey. 1998;53(5):320-8.
5. Shaw J, Dey S, Critchley H, Horne A. Current knowledge of the aetiology of human tubal ectopic pregnancy. Human reproduction update. 2010:dmp057.
6. Yuk J-S, Kim YJ, Hur J-Y, Shin J-H. Association between socioeconomic status and ectopic pregnancy rate in the Republic of Korea. International Journal of Gynecology & Obstetrics. 2013;122(2):104-7.
7. Bukulmez O, Yarali H, Gurgan T. Total corporal synechiae due to tuberculosis carry a very poor prognosis following hysteroscopic synechialysis. human reproduction. 1999;14(8):1960-1.
8. Kirk E, Bottomley C, Bourne T. Diagnosing ectopic pregnancy and current concepts in the management of pregnancy of unknown location. Human reproduction update. 2014;20(2):250-61.
9. Bouyer J, Rachou E, Germain E, Fernandez H, Coste J, Pouly J-L, et al. Risk factors for extrauterine pregnancy in women using an intrauterine device. Fertility and sterility. 2000;74(5):899-908.
10. Handler A, Davis F, Ferre C, Yeko T. The relationship of smoking and ectopic pregnancy. American Journal of public health. 1989;79(9):1239-42.
11. Bouyer J, Coste J, Fernandez H, Job-Spira N. [Tobacco and ectopic pregnancy. Arguments in favor of a causal relation]. Revue d'epidemiologie et de sante publique. 1998;46(2):93-9.
12. Beral V. An epidemiological study of recent trends in ectopic pregnancy. BJOG: An International Journal of Obstetrics & Gynaecology. 1975;82(10):775-82.

Table 1. Association of age with ectopic pregnancy

		Nature of case or control		Total
		Case	Control	
Age of case or control	Below 35	76	88	164
	More than 35	14	2	16
Total		90	90	180

Table 2. Association of smoking with ectopic pregnancy

Smoking status of case or control		Nature of case or control		Total
		Case	Control	
	Yes	2	1	3
	No	88	89	177
Total		90	90	180

Table 3. Association of history of pelvic surgery with ectopic pregnancy

		Nature of case or control		Total
		Case	Control	
History of surgery of case or control	E&C	11	10	21
	D&C	3	0	3
	C-section	11	23	34
	induced miscarriage	2	6	8
	Laparotomy	11	5	16
	no history of surgery	52	46	98
Total		90	90	180

D&C: Dilatation and curettage
E&C: Evacuation and curettage

Table 4. Association of history of ectopic pregnancy with ectopic pregnancy

		Nature of case or control		Total
		Case	Control	
History of ectopic pregnancy of case or control	yes	12	5	17
	no	78	85	163
Total		90	90	180

Table 5. Association of history of IUCD with ectopic pregnancy

		Nature of case or control		Total
		Case	control	
History of IUCD insertion of case or control	yes	5	1	6
	no	85	89	174
Total		90	90	180
IUCD: Intra Uterine Contraceptive Device				

Table 6. Association of history of PID with ectopic pregnancy

		Nature of case or control		Total
		Case	control	
History of PID of case or control	yes	20	3	23
	no	70	87	157
Total		90	90	180
PID: Pelvic Inflammatory disease				

Table 7. Association of history of tubal disease with ectopic pregnancy

		Nature of case or control		Total
		Case	Control	
History of tubal disease of case or control	yes	2	0	2
	no	88	90	178
Total		90	90	180

Table 8. Association of history of ART with ectopic pregnancy

		Nature of case or control		**Total**
		Case	control	
ART of case or control	yes	12	9	21
	no	78	81	159
Total		90	90	180

Table 9. Association of history of endometriosis with ectopic pregnancy

		Nature of case or control		Total
		Case	control	
History of endometriosis of case or control	yes	1	0	1
	no	89	90	179
Total		90	90	180
ART: Assisted Reproductive Technique				

Table 10. Association of low socioeconomic status with ectopic pregnancy

		nature of case or control		Total
		Case	control	
low socioeconomic status of case or control	Yes	8	8	16
	No	82	82	164
Total		90	90	180

Table 11. Association of history of tuberculosis status with ectopic pregnancy

		nature of case or control		Total
		Case	control	
history of tuberculosis of case or control	Yes	1	0	1
	no	89	90	179
Total		90	90	180