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Original Article

Anti Chlamydial Antibodies in Women with Ectopic Pregnancy

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Abstract

Background: To compare the frequency of chlamydia trachomatis infection in women with ectopic and with normal pregnancies.

Methods: In this case-control study diagnosed patients of ectopic pregnancy(EP)were included . The control group comprised of early normal intra uterine pregnancies (1st trimester). A total number of 88, comprising 44 cases and 44 controls were included in this study. Sera from patients was drawn at the time of operation or within the subsequent 24 hours. Anti-chlamydial IgG was performed by ELISA.

Results: Sampled cases population (n=44) had mean age distribution 26.48 years while among controls, mean age was 25.32 years. Presenting symptoms of cases showed pelvic pain (54.5%), bleeding (27.3%), vomiting (11.4%) and burning micturition (6.8%). During contraceptive practices , out of 88 patients, 5 cases and 20 controls gave history of safe sex practices. Out of 63 patients, who did not give history of any contraceptive practice, Anti-Chlamydia IgG was detected in 11 cases and 5 controls. Regarding Anti-Chlamydia IgG distribution among cases and controls, IgG was detected in 11(25%) cases and in 5(11.3%) controls.

Conclusion: Frequency of anti-chlamydial IgG antibodies was much higher in women with ectopic pregnancy (25%) as compared to healthy controls(11.3%).

Key Words: Ectopic pregnancy, ELISA, Enzyme linked immunosorbant assay, Anti-Chlamydia IgG

Introduction

Ectopic pregnancy is pregnancy production outside the uterine cavity, with more than 98% of the implant in the fallopian tube. Tubal ectopic pregnancy is the most common reason for maternal mortality in the first three months of pregnancy especially in developing countries. The main risk factors for tubal ectopic pregnancy are damage to the tubes from surgery or injury, smoking, in vitro fertilization and Chlamydia trachomatis infection. [1,2]

The main risk for tubal ectopic pregnancy factors are damage to the tubes from surgery or injury, smoking and in vitro fertilization.[3] Another important postulate for underlying cause of ectopic tubal may be the idea of change in transport media and environment of fallopian tubes leading to retention of the fetus.[4] Chlamydia infection is the most common sexually transmitted bacterial infection in the world, and it is highest in adolescents and young adults.[5] Chlamydia trachomatis is an obligate intracellular Gram negative pathogens and the majority of infections are asymptomatic, and thus continues to be diagnosed in substantial proportion of the infected individuals who may develop complications. Untreated cases of Chlamydial infection can also cause chronic pelvic pain in women. Ectopic pregnancy (EP), infertility and pelvic inflammatory disease (PID) are also caused by chlamydial infections.[6]Chlamydia trachomatis passed during childbirth may cause neonatal conjunctivitis and pneumonia.[7,8] Chlamydia infection also leads to the continuous transmission of infection to and fro in sexual partners and thus causing chronicity. Pelvic inflammatory disease is usually the ultimate outcome.[6] Inflammation ascends from the cervix of the infected female to the peritoneal cavity.[9-11] Several case-control studies and group analysis concluded that ectopic pregnancies are due to the sequelae of Chlamydia trachomatis salpingitis.[12] Despite the strong epidemiological, serological and histological associations between upper genital Chlamydia infection and subsequent ectopic pregnancy and fallopian infertility , the pathogenic mechanism leading to tubal damage still needs to be determined.[10] The appearance of plasma cell salpingitis has a strong commitment to women with ectopic pregnancy with anti-chlamydial IgG positive. Histopathologic findings of tubal tissue of Chlamydia trachomatis associated ectopic pregnancy shows plasma cell infiltration in lamina propria and submucosa.[13]

Persistent infection and re-infection with C. trachomatis is linked to a deterioration in the long pass complications.[14] Capacity to form Elementry body(EB) and Reticulate body (RB) during replication cycle improves survival of organisms in the genital tract. [15] The EB and C. trachomatis adheres to the epithelial cell surface and incorporated into phagosomes, which migrate to the distal region of golgi complex and prevent lysosome fusion to chlamydia infection and contact immediate destruction.[16] The infectious particles stability in humans, suggest that persistent infection may remain undetected for many years.

Once the fallopian tube epithelial cells are infected, degeneration and damage of inflammation along the tube steps in fallopian tube .Agglutination aggravates edema and inflammation of the endometrium trumpet. It leads to trumpet clubbing and pili partial or complete obstruction of the cavity. Peritonitis caused by Chlamydia trachomatis, which can affect the uterus, fallopian tubes causes fibrin exudation on the surface of the ovary. Often these adhesions are associated with chronic pelvic pain. Subsequent episodes of PID doubles the risk of ectopic pregnancy and infertility. [17-19]

Chlamydia antibodies testing has been incorporated on large scale for workup of infertility and has proven to be a non-invasive examination and effective way in terms of the cost.[20] Other modalities include Hysterosalpingogram (HSG) and Laparoscopy. HSG is not cost effective and laparoscopy is an invasive procedure. Despite of the clinical significance of the test for chlamydia antibodies, it has its limits, because of false negative and false positive results of the tests.[21] As a cause of false negative chlamydia antibody tests, it has been assumed that IgG antibodies may be reduced with the passage of time after C. Trachomatis infection, in light of the time period between initial infection in adolescence and fertility work -up in adulthood.

Patients and Methods

This was a case-control study conducted in Pathology Department, Holy Family Hospital. This study was conducted in a period of six months from June 2014 to November 2014. A total number of 88, comprising 44 cases and 44 controls were included in this study. Simple random sampling was done. Control group comprised of early normal intra uterine pregnancies (1st trimester). The diagnosis of ectopic pregnancy was confirmed on ultrasound. Women using an intrauterine contraceptive device (IUCD) at the time of conception and women with prior tubal surgery including tubal ligation were excluded from the study. After taking informed consent both cases and controls were interviewed using a questionnaire for age, socio-demographic characteristics, medical and obstetric histories. The patients' blood was collected for the detection of Anti-Chlamydia IgG.All sera aliquots were kept at –20°C till evaluation for anti-chlamydial IgG . Positive and negative controls served as internal controls for the reliability of the test procedure were analyzed with each test.

Results

Age distribution of sampled population (n=88)ranged from 19 to 38 years, with a mean age of 25.90 years ± 3.91. Sampled population was divided into four age groups. Age group ranging from 19 to 24 years had 12 (27.3%) cases and 20 (45.5%) controls. Age group ranging from 25-29 years had frequency of cases 23 (52.3%) and of controls 15 (34.1%). Using chi square test, p value was non-significant (p value=0.91) showing equal age distribution among cases and controls (Table 1).

Table 1: Age distribution of cases and controls

Group	**Cases No(%)**	**Controls N0(%)**
19-24 Years	12 (27.3%)	20(45.5%)
25-29 Years	23 (52.3%)	15(34.1%)
30-34 Years	8 (18.2%)	7(15.9%)
≥35 Years	1(2.3%)	2(4.5%)
Total	44 (100.0%)	44 (100.0%)

Using chi square test, p value = 0.91 (non-significant)

Table 2: Presenting complaints in patients with positive anti-chlamydial antibodies

Presenting complaint	No(%)
Pelvic pain	24(54.5)
Bleeding	12(27.3)
Burning micturition	3(6.80
Vomiting	5911.4)

Table 3: Parity Status distribution of cases (n=44) and controls (n=44)

Parity	Cases No(%)		Controls No(%)	
Primigravida	4	9.1	17	38.6
Multigravida	40	90.9	27	61.4
Total	44	100.0	44	100.0

Using chi square test, p value = 0.001 (Significant)

Frequency of illiterate cases was 27.2%. Pelvic pain (54.5%) was the commonest complaint (Table 2). In patients' group multigravida ware commonest 40(90.9%) and among controls 27(61.4%) were multigravida (Table 3).Regarding Anti-Chlamydia IgG distribution among cases and controls, IgG was

detected in 11(25%) cases and in 5(11.3%) controls. The difference was statistically non-significant at present sample size. (Table 4)

Table 4: Anti-Chlamydia IgG Status of cases and controls

Anti-Chlamydia IgG	Case Frequency (Percentage)	Control Frequency (Percentage)		
Present	11%	25%	5	11.3%
Absent	33%	75%	39	88.7%
Total	44%	100%	44	100%

Using Pearson Chi-Square test p value = 0.097;Odds ratio = 0.385 (95% Confidence Interval 0.121 to 1.220)

Table 5: Cross tabulation between parity & presence of Anti-Chlamydia IgG among cases & controls

Parity			Group		Total
			Case	Control	
Primigravida	Anti-Chlamydia IgG	Absent	4	16	20
		Present	0	1	1
	Total		4	17	21
Multigravida	Anti-Chlamydia IgG	Absent	29	23	52
		Present	11	4	15
	Total		40	27	67

Using Pearson Chi-Square test p value = 0.1 (non-significant)

Table 6: Absence of Safe Sex Practice and Anti-Chlamydia IgG among cases and controls

Practice of Safe Sex			Group		Total
			Case	Control	
No	Anti-Chlamydia IgG	Absent	28	19	47
		Present	11	5	16
	Total		39	24	63

Using Pearson Chi-Square test p value = 0.514;Odds ratio = 0.67 (95% Confidence Interval 0.2 to 2.24)

On cross tabulation, between parity and anti-Chlamydia IgG among cases and controls, out of 21 primigravida among control group, anti-Chlamydia IgG was present only in 1. While out of 67 multigravida patients, 11 among cases and 4 among control group were positive for anti-Chlamydia IgG. When chi-square test was applied, p value came out 0.1 i.e. non-significant. (Table 5). On cross tabulation, safe sex practices among cases and controls, out of 88 patients, 5 cases and 20 controls gave history of safe sex practices. When we cross tabulated absence of safe sex practices and anti-Chlamydia IgG among cases and controls, out of 63 eligible sampled population Anti-Chlamydia IgG was detected in 11 cases and 5 controls (Table 6)

Discussion

Chlamydia trachomatis is a silent infection and remains asymptomatic in majority. It is associated with ectopic pregnancy with a varying degree in different populations. This association is much related with sexual practices behaviour of the target population. In developing world, prevalence of Chlamydia trachomatis is supposedly increasing secondary to change in lifestyles, family traditions and western style of living. In present prevalence of Anti-Chlamydia IgG i.e. infection with Chlamydia trachomatis is high in women with ectopic pregnancy as compared to healthy controls. The total frequency of Chlamydia trachomatis is quite in excess as presented by other studies. In another Pakistani study, infection rate was reported 4% in women presenting to obstetric department of a tertiary care hospital of Khyber Pukhtunkhwa.[22] The reason behind this difference may be sampling technique implied in our and the discussed study. Similarly an Indian study has shown Chlamydia trachomatis infection rate 17.6% in tribal women.[23] In an observational study of Saudi population of pregnant females residing in Makah, seropositivity of Chlamydia trachomatis came out about 8.7%. [24]

Among cases with ectopic pregnancy, Anti-Chlamydia IgG was detected in 25% patients showing a high prevalence among cases showing an association with early miscarriage. In one of previously elaborated study, 7.6% women with Chlamydia trachomatis infection were infertile/sub fertile.[22] In another study, 59.1% of sampled population had more than once diagnosis of Chlamydia trachomatis infection prior to presentation with ectopic pregnancy. This study concluded that number of infections with Chlamydia trachomatis and its duration is associated with ectopic pregnancy.[25]

Among healthy pregnant controls, the frequency of Chlamydia trachomatis was found high i.e. 11.3%. This shows an increasing trend in toll of sexually transmitted diseases in our population. In a Norwegian study on Pakistani couples, 1% women had positive Chlamydia trachomatis (Anti-Chlamydia IgG detected) as compared to 12% men with Anti-Chlamydia IgG.[26]

Cases presented with different symptoms. Its spectrum may help us stratify the patients with more need of screening and treatment. Pelvic pain was

found in 24 (54.5%) patients, bleeding in 12(27.3%), vomiting in 5(11.4%) and burning micturition in 3(6.8%). So we may conclude that the pregnant females presenting to antenatal services with above nonspecific symptoms should be screened for Anti-Chlamydia IgG. Regarding parity distribution of cases and controls, primigravida had frequency of 4(9.1%) among cases and 17 (38.6%) among controls. While cases showed frequency multigravida about 40(90.9%) and 27(61.4%) among controls were multigravida. Safe Sex practices may play an important role in prevention as depicted by data of our study. Safe Sex practices among cases was low i.e. 1.1% while45.5% among controls.

Conclusions

1. Frequency of chlamydia trachomitis as detected by positive Anti-Chlamydia IgG infection in women with ectopic pregnancies is 25% and with normal pregnancies is 11%.Although in present sample size the difference is statistically non-significant but there is a difference in frequencies of Chlamydia trachomatis as detected by positive Anti-Chlamydia IgG infection in cases and controls.

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