Original Article

Reproductive Tract Infections

Frequency and Microbiological Profile of Reproductive Tract Infections in Women using Intra-Uterine Devices as a Mode of Contraception

Muhammad Usman Anjum[1], Sidra Farooq[3], Rana Tauqir Ullah Khan[2], and Nazia Shams[1]

ABSTRACT

Objective: To determine the frequency and etiological agents responsible for reproductive tract infections in women using intra-uterine devices as a mode of contraception

Study Design: Descriptive study

Place and Duration of Study: This study was conducted at the Department of Pathology, Frontier Medical & Dental College, Abbottabad and Obstet. & Gynae, Benazir Bhutto Shaheed Teaching Hospital, Abbottabad from December 2016 to June 2017.

Materials and Methods: Total of 203 female patients who have chosen IUD as a method of contraception were included in the study. High vaginal and endocervical swabs were taken and sent for microbiological analysis from patients who presented with clinical features of reproductive tract infection.

Results: Mean age of study participants was 32.61±5.49 years and mean duration of the next visit after IUD insertion was 24.30±6.90 days. Sixty patients presented with RTI and 32 of these patients presented within three weeks of insertion of IUDs. The incidence of RTIs was 29.56% and commonest isolates were Ureaplasmaurealyticum, Escherichia coli and Gardnerellavaginalis.

Conclusion: All women who opt for IUD as a mode of contraception must be screened for Ureaplasmaurealyticum and other microbes prior to IUD insertion to avoid infections by these organisms later. Longitudinal studies with longer follow up periods should be conducted to accurately determine the frequency of RTIs as well as microbiological agents responsible for these infections.

Key Words: Infections, contraceptive, intra-uterine device

Citation of articles: Anjum MU, Farooq S, Khan RTU, Shams N. Frequency and Microbiological Profile of Reproductive Tract Infections in Women using Intra-Uterine Devices as a Mode of Contraception. Med Forum 2017;28(12):23-25.

INTRODUCTION

Reproductive tract infections (RTIs) are characterized by the infection of genital or reproductive tract in sexually active women of reproductive age group.[1] They are ranked fifth among infectious diseases as a cause of soliciting medical care among adults and about 1/3rd of these infections occur in people of less than 25 years of age worldwide.[2] A patient suffering from RTI can present with different symptoms i.e. vaginal discharge, backache, genital ulcers, itching etc.[1] There are numerous risk factors which predispose women of reproductive age to acquire RTIs. These risk factors include menstruation, vaginal contraceptives, pregnancy and child-birth.[3]

[1.] Department of Pathology / Community Medicine[3], Frontier Medical and Dental College, Abbottabad.

[3.] Department of Obstet & Gynae, Benazir Bhutto Shaheed Teaching Hospital, Abbottabad.

Correspondence: Dr. Muhammad Usman Anjum, Assistant Professor of Pathology, Frontier Medical and Dental College, Abbottabad.
Contact No: 0312-5776119
Email: Dr_sidrafarooq@hotmail.com

Received: August 01, 2017; Accepted: October 16, 2017

Intrauterine devices (IUDs) are commonly used and preferred mode of contraception with a prevalence rate of 15%.[4] They offer long-term contraception and they are also cost effective and well-tolerated.[5, 6]IUDs are being used by more than 80 million women globally as a mode of contraception and their efficacy parallels that of tubal sterilization.[6, 7]But, they have not gained much popularity in certain geographical areas due to the anticipated risk of pelvic inflammatory disease (PID) which in turn can lead to various complications e.g. ectopic pregnancy and infertility. It is believed that presence of IUD in uterine cavity predisposes host to infections and thus, PID.[7] Micro-organisms, which are part of normal flora of female genital tract, are pushed up while placement of IUDs specifically by their tail. Hence, placement and presence of IUD may lead to bacterial contamination of endometrial cavity which in turn leads to PID.[6]

This study is carried out with the aim of determining the rate of RTIs as well as the etiological agents responsible for RTIs among females using IUD as a contraceptive method.

MATERIALS AND METHODS

This study was conducted at the Department of Pathology, Frontier Medical & Dental College,

Abbottabad and Obstet. & Gynae, Benazir Bhutto Shaheed Teaching Hospital, Abbottabad from December 2016 to June 2017. This was a descriptive study with consecutive non-probability sampling.

All patients between the ages of 18 – 50 years and who preferred IUD as a contraceptive method were included in the study. Pregnant women or those with anatomical gynecological defects or gynecological malignancies were excluded from the study.

About 203 patients who fulfilled the inclusion criteria were included in the study. Detailed history and examination was carried out by an experienced gynecologist. IUD was inserted using sterile technique. Afterwards, patients were advised follow up after one month. They were advised to report back immediately in case of lower abdominal pain, vaginal spotting and discharge. In patients suspected of RTIs, high vaginal and endocervical swabs were taken and sent for microbiological examination. Bacterial isolates were identified using standard laboratory techniques.[8] All the details regarding study participants were recorded in a proforma.

Data was stored and processed using SPSS version 21. Numerical variables like age and duration were represented as mean and standard deviation while categorical variables were represented as frequencies and percentages. Chi square test, with p value of less than 5 taken as significant, was used to study the relationship among different variables.

RESULTS

The mean age of 203 study participants was 32.61±5.49 years (range: 24 – 42 years). Mean duration of the next visit after IUD insertion was 24.30±6.90 days (range: 12 – 35 days).

Sixty patients, (29.56%), were diagnosed with genital tract infection, Table 1.

Table No. 1. Genital tract infections in study participants, (n=203)

Genital Tract Infection	Number	Percentage
Present	60	29.56%
Absent	143	70.44%
Total	203	100%

Table No. 2. Stratification of RTIs according to age and duration after insertion of IUD, (n=60)

Duration of IUD insertion	Genital tract infection		P value
	Present	Absent	
≤ 21 days	32	40	0.001*
22 - 42 days	28	103	
Total	60	143	
Age of patients			
24 – 33 years	34	73	0.46
34 – 43 years	26	70	
Total	60	143	

* P-value < 0.05

It was observed that most of genital infections were observed in younger patients between the ages of 24 – 33 years and the patients who developed these infections presented earlier usually in first three weeks after IUD insertion, Table 2.

Majority of patients, 20 (9.85%), were suffering from Ureaplasmaurealyticum infection followed by Escherichia coli infection in 16 (7.88%) patients. Whereas each of Gardnerellavaginalis and Neisseria gonorrhoeae were responsible for infection in 8 (3.94%) patients each, Table 3.

Table No. 3. Micro-organisms responsible for RTIs, (n=60)

Causative organism	Number of patients	%age
Ureaplasmaurealyticum	20	9.85%
Escherichia coli	16	7.88%
Neisseria gonorrhoeae	08	3.94%
Gardnerellavaginalis	08	3.94%
Mycoplasma hominis	04	1.97%
Chlamydia trachomatis	04	1.97%
Total	60	29.55%

DISCUSSION

Reproductive tract infections pose a significant public health threat and are second most common reason for healthy life loss among females of reproductive age group in developing countries.[9] It is estimated that more than 200 million women suffer from RTIs each year in developing countries.[10] RTIs occurring secondary to contraceptives lead to ectopic pregnancy, infertility and pelvic inflammatory disease which in turn lead to higher morbidity and mortality in mothers and their neonates.[8] There is a significant loss of economic productivity secondary to morbidity related to RTIs.[9]

In our study, sixty patients, (29.56%), were diagnosed with RTIs. Most of the patients, 56.67%, who were suffering from RTIs were between the ages of 24 – 33 years. Similar to our study, Ferraz et al have reported the prevalence of these infections to be 29.1% among their Brazilian patients.[11] Likewise, Egbe et al have found that the frequency of RTIs was 36.90% among their Nigerian subjects while majority of their patients, (68.18%), were between the ages of 26 – 30 years.[8] In another study conducted in Turkey by Deveer et al, the rate of RTIs was reported to be 55.9%.[5] The difference in reported rate of RTIs among different studies could be due to the variation in the rate and acceptability of IUD as a contraceptive method in different countries. Majority of our patients, 53.33%, suffering from RTIs presented within first three weeks after insertion of IUD.It is also reported that there is a higher risk of developing RTIs within first few weeks of contraceptive use especially IUDs.[6, 12]

Ureaplasmaurealyticum was the most common isolate found in our patients followed by Escherichia coliand

Neisseria gonorrhoeae. Deveer et al have found that the most common isolate was Ureaplasmaurealyticum followed by Mycoplasma hominis and Escherichia coli in their study.[5] Likewise, Kaliterna et al have reported that the most common isolates among IUD users were Ureaplasmaurealyticum and Escherichia coliin their Croatian subjects.[13] The higher incidence of Ureaplasmaurealyticum may be due to the fact that these micro-organisms are part of normal flora of female genital tract and therefore, they reach uterine cavity by the tail of IUD while insertion of IUDs.

CONCLUSION

The prevalence of RTIs was 29.56% with Ureaplasmaurealyticum and Escherichia coli as the most common isolates. Most of the patients presented within first three weeks after insertion of IUD. All women who opt for IUD as a mode of contraception must be screened for Ureaplasmaurealyticum and other microbes prior to IUD insertion to avoid infections by these organisms later. Longitudinal studies with longer follow up periods should be conducted to accurately determine the frequency of RTIs as well as microbiological agents responsible for these infections.

Author's Contribution:

Concept & Design of Study:	Muhammad Usman Anjum, Sidra Farooq
Drafting:	Rana Tauqir Ullah Khan and Nazia Shams
Data Analysis:	Rana Tauqir Ullah Khan and Nazia Shams
Revisiting Critically:	Muhammad Usman Anjum, Sidra Farooq
Final Approval of version:	Muhammad Usman Anjum

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Kafle P, Bhattarai SS. Prevalence and Factors Associated with Reproductive Tract Infections in Gongolia Village, Rupandehi District, Nepal. Advances in Public Health 2016;2016:5.
2. Prasad JH, Abraham S, Kurz KM, George V, Lalitha MK, John R, et al. Reproductive tract infections among young married women in Tamil Nadu, India. Int family planning perspectives 2005;31(2):73-82.
3. Mani G. Prevalence of reproductive tract infections among rural married women in Tamil Nadu, India: A community based study. J Pioneer Med Sci 2014;4(1):18-24.
4. Thonneau P, Goulard H, Goyaux N. Risk factors for intrauterine device failure: a review. Contraception 2001;64(1):33-7.
5. Deveer R, Deveer M, Sozen H, Ye Ü, Eren A, Beydilli H, et al. Infection frequency among intrauterine copper T-380A contraceptive users. Acta Medica 2013;29:489.
6. Pal Z, Urban E, Dosa E, Pal A, Nagy E. Biofilm formation on intrauterine devices in relation to duration of use. J Med Microbiol 2005;54 (Pt 12):1199-203.
7. Peterson HB, Xia Z, Hughes JM, Wilcox LS, Tylor LR, Trussell J. The risk of pregnancy after tubal sterilization: findings from the U.S. Collaborative Review of Sterilization. Am J Obstetrics and Gynecol 1996;174(4):1161-8; discussion 8-70.
8. Egbe CA, Onwufor UC, Omoregie R, Enabulele OI. Female Reproductive Tract Infections Among Vaginal Contraceptive Users in Benin City, Nigeria. Genomic Medicine, Biomarkers, and Health Sciences 2011;3(1):49-52.
9. Elahee SMA, Mahmud S, Tanvir S, Rahman MZ. Breaking the Silence: Reproductive Tract Infections (RTIs) Among Women in Slums of Khulna City, Bangladesh. Bangladesh e-J Sociol 2013;10(2):119-34.
10. World Health Organization, Global Prevalence and Incidence of Selected Transmitted Infection, Overview and Estimate, WHO, Geneva, Switzerland, 2001.
11. Ferraz do Lago R, Simoes JA, Bahamondes L, Camargo RP, Perrotti M, Monteiro I. Follow-up of users of intrauterine device with and without bacterial vaginosis and other cervicovaginal infections. Contraception 2003;68(2):105-9.
12. Sowmini C, Sankara S. Reproductive morbidity among contraceptive users: need for quality services. J Family Welfare 2004;50(1):31-7.
13. Kaliterna V, Kucisec-Tepes N, Pejkovic L, Zavorovic S, Petrovic S, Barisic Z. An intrauterine device as a possible cause of change in the microbial flora of the female genital system. J Obstet Gynaecol Res 2011;37(8):1035-40.
14. Viscardi RM. Ureaplasma species: role in diseases of prematurity. Clinics in Perinatol 2010;37(2): 393-409.