Research Article

A hospital-based study on association between reproductive tract infections and abortions

Poonam Prakash Shingade[1], Naveen Khargekar[2], Vandana Khargekar[1]

[1]Department of Community Medicine, ESIC Medical College, Gulbarga, Karnataka, India.
[2]Preventive Oncology, Tata Memorial Hospital, Mumbai, Maharashtra, India.
Correspondence to: Poonam Prakash Shingade, E-mail: dr.poonam.ps@gmail.com

Received November 10, 2015. Accepted November 21, 2015

Abstract

Background: Iatrogenic reproductive tract infections (RTIs) are more common where health-care providers do not have the training or provisions to carry out procedures without harm.

Objective: To explore the relationship between RTIs and abortions.

Materials and Methods: A hospital-based cross-sectional study was conducted during January to March 2012 in STI/RTI Clinic located in urban slums of Mumbai, India, involving total 273 married females of reproductive age group who presented with symptoms of RTI. Tool for interview was the questionnaire about sociodemographic profile, detail history regarding abortions, and symptoms of the participants. Disease-specific laboratory methods were used to confirm diagnosis of RTI.

Result: The study findings showed proportion of the abortions were more with increasing age. Totally, 11 (61.1%) participants were living in three-generation type of family; only 30 (36.1%) of the participants who were educated up to higher secondary level showed less number of abortions, and 34 (60.7%) participants were belonging to class V showed history of abortion. Of total RTIs, 44.69% were mucopurulent cervicitis, followed by candidiasis and nonspecific vaginitis, with less proportion of gonococcal infections, syphilis, and herpetic ulcers. About 81.30% participants were presented with RTI who showed history of abortion and 83.7% who experienced RTI had undergone induced type of abortion and showed statistically significant association between RTI and method of induced abortion; but, the association between the place of induced abortion and RTI was statistically not significant.

Conclusion: The results revealed an association between abortions and RTI.

KEY WORDS: Induced abortions, RTI, ever married, spontaneous abortions

Introduction

Reproductive tract infections (RTIs) occur owing to organisms usually found in the reproductive tract or introduced externally during sexual contact or medical procedures. These dissimilar but overlapping types of RTI are called endogenous, sexually transmitted infections (STIs), and iatrogenic, depending on how they are acquired and spread.[1]

Access this article online	
Website: http://www.ijmsph.com	Quick Response Code:
DOI: 10.5455/ijmsph.2016.10112015255	

More than 340 million curable and many more noncurable STIs befall every year.[2] Among women, nonsexually transmitted RTIs are generally more common. Iatrogenic infections are highly observed in cases with STIs and where there is no proper training or setting for health-care providers to carry out procedures without harm. At places lacking safe services and follow-up care, postpartum and postabortion infections are frequently observed. Hence, women demanding abortion are at enhanced risk of developing RTI complications. Some 70,000 women die each year as a result of unsafe abortion. Several other women endure the trauma but experience all over their lives side effects such as infertility, chronic morbidity, and permanent physical impairment.[3] An estimation shows

International Journal of Medical Science and Public Health Online 2016. © 2016 Poonam Prakash Shingade. This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0/), allowing third parties to copy and redistribute the material in any medium or format and to remix, transform, and build upon the material for any purpose, even commercially, provided the original work is properly cited and states its license.

that majority (6.7 million) of the abortions carried out in India every year are unlawful. Moreover, uncertified providers are determined to carry out abortions two to 10 times more than those done legally by physicians and result in potentially serious adverse consequences for women's health.[4]

In India, women possess less control over their own fertility and reveal worse health. This fact shows that the rate of abortions in such women can be very high, inclusive of both spontaneous and induced abortions, and can be more than once.[5] The relationship between abortion and RTIs has been hardly explored in the Indian context. So, this study is a sincere effort to add research to this topic.

Objective

To explore the association between abortions and RTIs.

Materials and Methods

Study Area

It was planned in slums of Mumbai where the maximum population is migrants from mostly Uttar Pradesh and Bihar. Sampling frame was formed by those who visited at STI/RTI clinic to get cured of their complaints, and this clinic is affiliated to Department of Community Medicine, Topiwala National Medical College and BYL Nair Hospital, Mumbai, Maharashtra, India.

Study Population and Duration

The study population consisted of symptomatic ever married women in the reproductive age group who were willing to participate in the study. Of 411 female subjects who attended OPD in study duration, 76 were excluded from the study as they did not fulfill the inclusion criteria and 62 were not willing for laboratory tests or internal examination done to confirm the diagnosis. So, finally 273 participants were enrolled in the study. Approval from the institutional ethics committee was sought before the start of study, which was performed from January 1, 2012, to March 31, 2012.

Data Collection

The purpose of the study was explained to each woman and informed consent also obtained. Data on sociodemographic characteristics of respondents in terms of women's age, education, occupation, type of family, and socioeconomic class were collected. Detailed history regarding abortions such as number, type, and place of treatment for it were recorded. For the diagnosis of the RTI, sterile swab sticks were used to collect vaginal and cervical samples of each patient, while 2 mL venous blood of each patient was also dispensed into EDTA bottles. Samples were labeled and taken directly to the laboratory for examination. The blood test carried out was HIV test and syphilis test. Vaginal swab microscopy and Gram staining of cervical swabs were carried out. The data obtained were analyzed using χ^2-test to determine the hypothesis.

Results

Total participants enrolled in the study were 273. Results in Table 1 shows that maximum 94 (34.4%) participants were in the age group of 26–30 years, 237 (86.8%) were Muslims by religion, and 64(23.4%) were illiterates. Among the study participants, 165 (60.4%) and 133 (48.7%) were living in nuclear type of family and belonging to class IV, respectively. Totally, 123 (45.1%) participants revealed history of abortion. Among those who showed history of abortion, 11 (52.4%) were in the age group of 26–30 years and 6 (85.7%) in the age group of 41–45 years. It showed that, as age advances, chances of abortion are more. The association was statistically significant. Religion of the participants had not shown association with RTI. Totally, 11 (61.1%) participants were living in three-generation type of family, who revealed history of abortion, when compared with 27 (30%) who were living in nuclear-type family. Proportion of the participants who were educated up to higher secondary level showed less number of abortions [30 (36.1%)]. The association of educational level of study population and type of family with RTI was statistically significant. About 113 (45.2%) participants were unemployed with history of abortion. Totally, 34 (60.7%) participants were belonging to class V who showed history of abortion, with a statistically significant association. Table 2 shows the magnitude of RTIs among the study participants who had undergone abortion. Of total RTIs, 44.69% were mucopurulent cervicitis and 24.83% candidiasis, followed by nonspecific vaginitis (13.47%) and fungal infection (7.80%). Proportion of gonococcal infections (1.42%), syphilis (0.70%), and herpetic ulcers (0.70%) was very low in this study.

Table 3 shows that 100 (81.30%) participants who presented with RTI revealed history of abortion when compared with 73 (48.67%) participants with no history of abortion. Totally, 72 (83.7%) female subjects who experienced RTI had undergone induced type of abortion when compared with 24 (61.6%) subjects with history of spontaneous abortion. About 56 (88.9%) women presented with RTI of total 63 female subjects who had undergone induced abortion by surgical method when compared with 16 (69.95) subjects who terminated pregnancy by using medical method. Statistically significant association of RTI was present in the study with induced abortions and method of induced abortion. Proportion of RTIs was more among participants who had undergone induced abortions in government sector [17 (89.5%)]. But, the association between the two was statistically not significant.

Discussion

In this study, among those who revealed history of abortion, 11 (52.4%) were in the age group of 26–30 years and showed that, as age advances, chances of abortion are more. This finding may be owing to proportion of induced abortion among women with high gravidity with advanced age probably to limit

Table 1: Sociodemographic profile of study subjects (n = 273)

Sociodemographic profile		History of abortion, n (%)		χ^2	p
		No	Yes		
	Total no	150 (54.9)	123 (45.1)		
Age (years)					
16–20	11 (4)	7 (63.6)	4 (36.4)	14.487	0.013
21–25	87 (31.9)	60 (69)	2 (31)		
26–30	94 (34.4)	46 (48.90	48 (51.1)		
31–35	53 (19.4)	26 (49.1)	27 (50.9)		
36–40	21 (7.7)	10 (47.6)	11 (52.4)		
41–45	7 (2.6)	1 (14.3)	6 (85.7)		
Religion					
Hindu	36 (13.2)	20 (55.6)	16 (44.4)	0.006	0.937
Muslim	237 (86.8)	130 (54.9)	107 (45.1)		
Type of family					
Nuclear	165 (60.4)	63 (70.0)	27 (30)	12.89	0.002
Joint	90 (33)	80 (48.5)	85 (51.5)		
Three generation	18 (6.6)	7 (38.9)	11 (61.1)		
Education					
Illiterate	64 (23.4)	31 (77.5)	9 (22.5)	20.04	<0.001
Primary	86 (31.5)	24 (37.5)	40 (62.5)		
Secondary	83 (30.4)	42 (48.8)	44 (51.2)		
HSC and above	40 (14.7)	53 (63.9)	30 (36.1)		
Occupation					
Skilled	7 (2.6)	5 (71.4)	2 (28.6)	2.275	0.517
Semiskilled	12 (4.4)	7 (58.3)	5 (41.7)		
Unskilled	4 (1.5)	1 (25)	3 (75)		
Unemployed	250 (91.6)	137 (54.8)	113 (45.2)		
SES					
Class I	5 (1.5)	4 (80)	1 (20)	9.765	0.041
Class II	28 (10.3)	18 (64.3)	10 (35.7)		
Class III	51 (18.7)	33 (64.7)	18 (35.3)		
Class IV	133 (48.7)	73 (54.9)	60 (45.1)		
Class V	56 (20.5)	22 (39.3)	34 (60.7)		

Table 2: Magnitude of RTIs among the study participants who had undergone abortion

RTI	Number	Percentage
Nonspecific cervicitis	63	44.69
Candidiasis	35	24.83
Nonspecific vaginitis	19	13.47
Fungal infection	11	7.80
HIV	3	2.13
Herpetic ulcers	3	2.13
Gonococcal cervicitis	2	1.42
Bacterial vaginosis	1	0.70
Syphilis	1	0.70
Trichomoniasis	3	2.13
Total	141	100.00

Table 3: Association between type of abortion and STI/RTI (n = 123)[a]

	STI/RTI present, *n* (%)	STI/RTI absent, *n* (%)	Total, *n* (%)	χ^2	*p*
History of abortion					
Yes	100 (81.30)	23 (18.70)	123 (45.1)	31.06	<0.001
No	73 (48.67)	77 (51.33)	150 (54.9)		
Total	173 (63.36)	100 (36.64)	273 (100)		
Type of abortion					
Induced	72 (83.7)	14 (16.3)	86 (69.91)	5.369	0.02
Spontaneous	24 (61.6)	13 (33.4)	37 (30.09)		
Total	96 (81.1)	26 (18.9)	123 (100)		
Method of termination of pregnancy[b]					
Medical	16 (69.9)	7 (30.1)	23 (100)	4.616	0.03
Surgical	56 (88.9)	7 (11.1)	63 (100)		
Place of induced abortion[b]					
Government	17 (89.5)	2 (10.5)	19 (100)	0.592	0.442
Private	55 (82.1)	12 (17.9)	67 (100)		

Only data of 86 participants those who had undergone induced abortion were analyzed.

family size or future expenses. The findings of this study were in contrast to studies done by Agarwal and Salhan.[6] Religion of the participants did not show association with RTI. This finding is also in contrast to findings of Bahadur et al.[7] Proportion of the participants who were educated up to higher secondary level showed less number of abortions [30 (36.1%)], in accordance with similar findings in a study done by Agarwal and Salhan[6] who observed that majority of women (70.7%) were illiterates. Women of lower socioeconomic status constituted maximum (60.7%), in similar to observation noted by Humayun et al. (87.6%).[8] This study showed that the proportion of induced abortion [86 (69.91%)] was greater than spontaneous abortions [37 (30.09%)], similar to the findings by Shivakumar and Vishvanath[9] in which proportion of induced abortions (54.7%) was greater than spontaneous abortions (45.3). The study showed that 100 (81.30%) participants presented with RTI who revealed history of abortion. Similar findings were shown by Hellberg et al.[10] stating that, among the women who have undergone an abortion, history of pelvic inflammatory disease is fourfold than that of women who have not undergone an abortion.[10] This study showed that 72 (83.7%) women who experienced STI/RTI had undergone induced type of abortion when compared with 24 (61.6%) women with history of spontaneous abortion. Bhawsar et al.[11] also found the prevalence of RTIs/STIs among women in Punjab to be significantly higher in those with history of induced abortions. It is generally seen that ascending infection is particularly common during transcervical procedures such as induced abortion by surgical method. If abortion is performed in women with untreated cervical infection or under unhygienic condition, there is more chances of disruption of mechanical barrier present at cervix, which makes it prone to infection. In this study, there is no association between place of induced abortion and STI/RTI, i.e., whether it was carried out in a government or private sector. Table 3 shows that 17 (89.5%) and 55 (82.1%) female subjects with STI/RTI had undergone abortion in government and private hospitals, respectively. Study conducted by Devi and Swarnalatha showed similar findings. The association between place of delivery and STI/RTI was not significant ($p > 0.05$).[12]

Limitations

Hospital-based study, small sample size, and limited study period were limitations of this study.

Conclusion

This study concludes increasing age of women as a risk factor for abortion. Those who were living in three-generation type of family revealed more proportions of abortions. Majority of women who had undergone abortion were educated up to primary education and belonged to low socioeconomic status. In this study, more number of female subjects had undergone induced abortion, and the association between the two was statistically significant. RTIs were more among those who showed history of induced abortion, especially by surgical method, suggesting the iatrogenic mode of transmission. There was no statistically significant association between the place of induced abortion and STI/RTI (government or private).

Recommendations

The above-mentioned conclusions indicate that there is a need for effective interventions and community-based strategies for reaching vulnerable population. Efforts should be made to take utmost care and follow minimum standards of aseptic procedures during induced abortions by medical and paramedical staffs, with emphasis on dissemination of information regarding situations, which increased risk of STI, and promote IEC regarding RTI, especially to women of reproductive age group.

Acknowledgment

The authors deeply acknowledge the support rendered by the staff of UHC, Govandi, Mumbai, India. They wish to convey their full appreciation to Dr. Yasmeen Kazi, Assistant Professor Department of Community Medicine, TNMC, Mumbai, for her critical review and sophisticated editing of this article.

References

1. WHO: *Sexually Transmitted and Other Reproductive Tract Infections Integrating STI/RTI Care for Reproductive Health; A Guide to Essential Practice*. Geneva: WHO, 2005. p. 14.
2. WHO. *World Health Organization Consultation: Estimation of the Incidence and Prevalence of Sexually Transmitted Infections*. Treviso, Italy: WHO, 2002.
3. *Abortion in Developing World*. Available at: http://www.who.int/inf-pr-1999/en/pr99-28.html (last accessed on November 7, 2012).
4. Jejeebhoy SJ, Zavier AJF, Acharya R, Kalyanwala S. *Increasing Access to Safe Abortion in Rural Maharashtra: Outcomes of a Comprehensive Abortion Care Model*. New Delhi: Population Council, 2011.
5. Babu NP, Nidhi D, Verma RK. Abortion in India: what does the National Family Health Survey tell us? J Fam Welfare 1998;44:45–54.
6. Agarwal S, Salhan S. Septic abortion—current scenario in a tertiary care hospital. J Obstet Gynecol India 2008;58(2):147–51.
7. Bahadur A, Mittal S, Sharma JB, Sehgal R. Socio-demographic profile of women undergoing abortion in a tertiary centre. Arch Gynecol Obstet 2008;278:329–32.
8. Humayun A, Sheikh NH, Ashraf M. Abortion prevalence and sociodemographic differentials. E: Biomedica 2005;21:12–8.
9. Shivakumar BC, Vishvanath D, Srivastava PC. A profile of abortion cases in a tertiary care hospital. J Indian Acad Forensic Med 2011;33(1):33–9.
10. Hellberg D, Mogilevkina I, Mardh PA. Sexually transmitted diseases and gynecologic symptoms and signs in women with a history of induced abortion. Sex Transm Dis 1999;26:197–200.
11. Bhawsar RD, Singh JP, Khanna A. Determinants of RTIs/STIs among women in Punjab and their health seeking behaviour. Indian J Fam Welfare 2005;51:24–34.
12. Devi BS, Swarnalatha N. Prevalence of STI/RTI among reproductive age women (15-49 years) in urban slums of Tirupati town, Andhra Pradesh. Health Popul Perspect Issues 2007;30(1): 56–70.

How to cite this article: Shingade PP, Khargekar N, Khargekar V. A hospital-based study on association between reproductive tract infections and abortions. Int J Med Sci Public Health 2016;5 (Online First). DOI: 10.5455/ijmsph.2016.10112015255

Source of Support: Nil, **Conflict of Interest:** None declared.