Original Research Paper

Volume : 5 | Issue : 10 | October 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Incidence of STI/RTI In Pregnant and Non Pregnant Women And Pregnancy Outcome

MEDICAL SCIENCE

KEYWORDS : sexually transmitted infections, reproductive tract infections, Human Immunodeficiency Virus,

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ABSTRACT

Aims and objectives: To find incidence of sexually transmitted infections in women of reproductive age group and it's adverse effects on maternal and fetal outcome. Material and methods: After history taking of 500 pregnant and 500 non-pregnant women, examination done with special emphasis on symptomatology of STI. Vaginal pH was detected. Hanging drop preparation, wet and KOH smear, Whiff test, Gram staining for Nugent's scoring was done to detect various infections. Test for HIV-1 & 2, HPV and syphilis was done. Results: Incidence of STI/RTI in pregnant and non pregnant women was 22.7% and 33% respectively. Gardenella and Candida co infection was 20(33.8%) and 22 (29.7%) in pregnant and non pregnant women respectively. Candida, in 37(7.6%) pregnant women where as Gardenella was most common, 48(9.8%) in non pregnant women. The difference between two groups was statistically significant for normal pregnancy outcome (p=0.000) and preterm delivery (p=0.000). The difference was not statistically significant for intrauterine fetal demise (P=0.45), intrauterine growth restriction (p=.80), low birth weight babies(p=.10) and abortion (p=.26). Conclusion: In view of the higher prevalence of STIs among rural and illiterate women primary health care level needs to be strengthened in respect of reproductive health.

Introduction:

Sexually Transmitted Infections (STIs) are a group of communicable diseases that are transmitted predominantly by sexual contact and caused by a wide range of bacteria, viruses, protozoa, fungi and ectoparasites. The prevalence of STIs vary from one country to another and among different groups within the same country. Increasing incidence of Sexually Transmitted Infections is due to promiscuity and frequent change of partners and related morbidities and mortalities are due to lack of awareness, poor health care access, migrant population, poor menstrual hygiene, malnutrition as well as ignorance and reluctance to discuss the disease. In developing countries, Sexually Transmitted Infection (STIs) are one of the most commonly reported gynaecological problems and probably the second most common gynaecological problem after menstrual disorders (Khan et al., 2009)[1]. Failure to provide effective treatment can lead to pelvic inflammatory disease, infertility, chronic cervicitis, cervical and other malignancies. STIs in pregnant women have been associated with a number of adverse pregnancy outcomes including spontaneous abortion, ectopic pregnancy, stillbirth, preterm prelabour rupture of membrane, intrauterine growth restriction, postpartum endometritis and various sequelae in surviving neonates.

It is estimated that the number of pregnant women with STIs is increasing by about 230 million a year in the developed countries and double that number in the developing countries. According to Neeraj Jindal et al.(2009)[2], emerging epidemics of Acquired Immunodeficiency Syndrome and identification of STIs as a cofactor in its acquisition have made the control of these infections, one of the strategies imperative to decrease the transmission of HIV/AIDS.

Bacterial vaginosis, Candidiasis and Trichomoniasis account for 90% of all etiologies of abnormal vaginal discharge however multiple infections can also coexist. The Centres for Disease Control and Prevention recommends screening of all pregnant women for human immunodeficiency virus, Hepatitis B surface antigen and serology for syphilis at the first antenatal visit.

The World Health Assembly endorsed the global strategy for the prevention and control of STI in May 2006[3]. The strategy urges all countries to control the transmission of STIs by implementing a number of interventions, including the following:

1. Promoting safer sexual behaviours.

2. General access to quality condoms at affordable prices.

3. Promotion of early recourse to health services by people suffering from STI and by their partners.

4. Inclusion of STI treatment and basic health services.

5. Specific services for populations with high-risk sexual behaviour such as sex workers, adolescents, long distance truck-drivers, military personnel, substance abusers and prisoners.

6. Proper treatment of STI.

7. Screening for clinically a symptomatic patients, where feasible (e.g. syphilis, chlamydia).

8. Provision for counselling and voluntary testing for HIV infection.

9. Prevention and care of congenital syphilis and neonatal Conjunctivitis.

10. Involvement of all relevant stakeholders, including the private sector and the community, in prevention and care of STI.

The study was conducted to find out the incidence of sexually transmitted infections in women of reproductive age group, to assess the distribution of sexually transmitted infections in women of reproductive age group in relation to age, parity, social class, habitat and education. To assess the adverse effects of sexually transmitted infections on maternal and pregnancy outcome.

Material and Methods:
The study was carried out in the department of Obstetrics and Gynaecology of Swaroop Rani Nehru Hospital and Kamla Nehru Memorial Hospital, affiliated to M.L.N. Medical College in (2014-2015). 500 pregnant and 500 non-pregnant women were studied. 17 pregnant women and 12 non pregnant women were lost to follow up. Rest of the 483 pregnant and 488 non pregnant women were divided into four groups.

Group IA - Pregnant women with sexually transmitted infections (STIs).

Group IB - Pregnant women without STIs.

Group IIA - Non pregnant women with STIs.

Group IIB - Non pregnant women without STIs.

After consent, detailed history and examination with special emphasis on symptomatology of STI was done. Vaginal pH was detected by litmus paper, hanging drop preparation, wet and KOH smear were prepared to detect trichomonas and candida respectively. Whiff test was performed to detect bacterial vaginosis. Reference value for Normal vaginal pH was taken between 3.8 to 4.2.

Gram staining was done for Nugent's scoring based on semi-quantitative assessment of presence of 3 classes of morphotypes (Lactobacilli, Gardenerella & Bacteroides, Mobiluncus species) for the diagnosis of Bacterial vaginosis.

Nugent's score:
Scoring system (0-10) from gram stained vaginal smear

Total score	Lactobacillus morphotypes (per HPF)	Gardnerella and Bacteroides species morphotypes (per HPF)	Curved gram variable rods **(per HPF)**
0	4	0	0
1	3	1	1 or 2
2	2	2	3 or 4
3	1	3	
4	0	4	

Interpretation of Nugent's score

Nugent score	CLUE CELLS	REPORT
0-3		Smear not consistent with BV
4-6	ABSENT	
4-6	PRESENT	Smear consistent with BV
≥7		

The SD BIOLINE HIV-1/2 3.0 test was done for qualitative detection of antibodies of all isotypes (Ig G, IgM, Ig A) specific to HIV -1 and HIV-2.

RPR test (+ve in up to or > 1:8 dilution) was done for syphilis and HPV infection was detected by Hybrid Capture II technique.

Result: Out of 483 pregnant women 134 (27.7%) were having STI and formed group I A, rest of the pregnant women formed group IB, whereas out of 488 non pregnant women 161 (33%) were having STI and formed group IIA, rest non pregnant women were included in group IIB.

Among 134 pregnant women of group-1A, maximum, 58(43.3%) were of 20-24 yrs of age group and least 2(1.5%) were in 40-44 yrs of age group. Whereas in non infected pregnant women of group IB, maximum 129(36.9%) were in 25-29 yrs of age group and least 3(0.86%) belonged to 40-44 yrs of age group.(Table-I)

Among 161 non-pregnant women of group-IIA, maximum, 56(34.8%) belonged to 25-29 yrs of age group and least number of women 4(2.5%) were from 40-44 yrs of age group. In group-IIB, out of 327 non-pregnant women, maximum, 120(36.7%) were from 25-29 yrs of age group and minimum number, 7(2.2%) were from 40-44 yrs.

Parity wise study showed that significant number of women with STI/RTI were more than 2 parity. 40(29.8%) women in pregnant group IA and 58(36.1%) women in non pregnant group IIA, with increasing incidence with advancing parity.(table-II)

Symptomatology study revealed vaginal discharge as the most common complaint in 115 (85.8%) pregnant women of group IA and 130(80.7%) non pregnant women of group IIA followed by lower abdominal pain, in 103(76.8%) and 116(72%) followed by itching in 60 (44.7%) in group IA and menstrual complaints 83(51.5%) in group IIA. The fourth common complaint was abnormal bleeding per vaginum in the pregnant women of group IA, 50 (37.3%) either in the form of abortion or complication and itching, 74(45.9%) in non pregnant group IIA. Burning micturition was next with 48(35.8%) and 56(34.8%) icidence in group IA and IIA respectively. Dyspareunia was in 13(9.7%) in group IA and 25(15.5%) in group IIA. Skin lesions were the least observed symptom in 2(1.4%) women in group IA and 3(1.8%) in group IIA.(Table-III)

Amongst observed viral STIs; HIV was the most prevalent infection, 20(57.2%) in pregnant group and 14(53.8%) in non pregnant group followed by HBsAg positivity in 11(31.4%) and 7(26.9%) in group IA and IIA respectively. HSV-2 and HPV infections were detected in 3(8.6%); 1(2.8%) and 4(15.4%); 1(3.8%) in groups IA and IIA respectively.

The overall prevalence of HIV infection was found 3.5%; HBsAg was 1.8%; HSV-2 was 0.72% and HPV was 0.2%. (Table-IV)

Mixed infections were more than isolated organism infections in both. The most common co-infection was Gardenella and Candida; 20(33.8%) and 22(29.7%) in goup IA and IIA respectively. Amongst isolated infections Candida was most common, 37(7.6%) in pregnant women of group IA whereas Gardenella was most common, 48(9.8%) in the non pregnant group IIA. N. Gonorrhoea infection was not detected in any pregnant women.(Table-V)

Table VI shows Pregnancy outcomes in infected group IA and non infected group IB. Prevalence of abortions, intrauterine growth restriction and intrauterine deaths in group IA were non significantly different from non infected pregnant women of group IB but preterm delivery and low birth weight babies were significantly more in group IA than IB

The difference between both the groups was found to be statistically significant for normal pregnancy outcome (p=0.000) and preterm delivery (p=0.000). The difference was not found statistically significant for intrauterine fetal demise (P=0.45), intrauterine growth restriction (p=.80), low birth weight babies (p=.10) and abortion (p=.26)

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Discussion: In India reported incidence and prevalence of STI/RTI are just the tip of iceberg. Constraining factors are illiteracy, ignorance, poor health care access, rigid social norm and associated fear of stigma and discrimination.

STI/RTI are basically the disease of reproductive age with highest prevalence in second and third decade of life. Increasing birth order and parity shows statistically significant increase in the risk of STI/RTI as shown in this study as well as by Rathore et al (2003)[4], who showed increasing incidence of STI/RTI for 2.4 to 28.5 % in nulliparous, primigravida and nulligravida respectively.

It affects lower genital tract, altering vaginal flora and PH, causing vaginitis, cervicitis and abnormal vaginal discharge. If these infections ascend up the genital tract, leads to inflammation and congestion of pelvic cavity, PID, lower abdominal pain, dyspareunia and low backache. Abnormal vaginal discharge has been documented as the most comman symptoms in pregnant (85.8%) and non pregnant women (80.7%) followed by lower abdominal pain and low backache in this study in accordance with the SC Panda et al in 2007[5] and srivastava et al in 2008[6].

Among all STI/RTI, most consistently as well as most worrisome diagnosed ones are viral infections, HIV, HBsAg and HPV. The incidence of viral infection was found to be 26.11% in pregnant and 17.3% in non pregnant STI/RTI with comparable prevalence of candida infection. (7.6% in pregnant and 6.8% in non pregnant women)

HIV followed by HBsAg, followed by HPV were the most common viral infections, the overall incidence of HIV and HBsAg seropositivity amongst pregnant and non pregnant women were 3.5% and 1.8% that was comparable to msuya et al in 2009[7] who described pregnancy makes the vaginal pH acidic so more favourable to candidal infection. The most common viral infection in pregnant women were candida with bacterial vaginosis second in list wherever BV topped the list in nonpregnant women with trichomoniasis as second most common infection. More or less common non viral infection included BV, Candida, trichomoniasis and BV+candida co infection and Chlamydia.

Co infection with multiple microorganism were also not uncommon in this study. Higher prevalence of co infection and lower facilities to test the different types of individual infections at peripheral health care level might be the rationale behind NACO initiated syndromic management STI/RTI, syndromic treatment may be questioned for some overtreatment but definitely its benefit outweigh the drawback in arresting the spread of nonviral STI/RTI and thus arresting spread of HIV infection indirectly.

Pregnancy outcomes were statistically significant better in non infected group. Adverse pregnancy outcome like abortions, PPROM, PTL, IUGR, LBW and stillbirths were higher in infected group than non infected group. Though statistical significance was only found with pre term delivery and normal pregnancy outcome. This difference could be due to as maximum pregnant women with STIs, it leads to premature rupture of membranes and preterm labour while other pregnant women without STIs , generally come to our tertiary centre with other obstetric complications therefore the rate of caesarean section was higher among them.

This emphasises the early detection and treatment of STI/RTI becomes important to decrease the related adverse outcome as well as horizontal and vertical spread of disease.

Conclusion:
Early diagnosis and management of STIs at an early stage helps in improving women's health, economy and society. Awareness raised by NACO regarding vulnerability for HIV infection and increase use of condoms as a preventive measure has reduced the transmission of other sexually transmitted infections including HIV, Chlamydia and Niesseria gonorrhoea, thus preventing significant morbidity.

In view of the higher prevalence of STIs among rural and illiterate women primary health care level needs to be strengthened in respect of reproductive health, and awareness about reproductive health issues should be raised through suitable communication in order to bring about a positive behaviour change.

Table- I: Age wise distribution of the study population

Age group (Yrs)	Pregnant group (Group I)				Non pregnant (Group II)			
	Group I A		Group I B		Group II A		Group II B	
	No.	%	No.	%	No.	%	No.	%
15-19	24	17.9	31	8.9	7	4.4	26	7.95
20-24	58	43.3	106	30.4	43	26.7	101	30.9
25-29	35	26.1	129	36.9	56	34.8	120	36.7
30-34	10	7.5	68	19.5	34	21.1	61	18.6
35-39	5	3.7	12	3.4	17	10.5	12	3.7
40-44	2	1.5	3	0.86	4	2.5	7	2.2
Total	134		349		161		327	

Table- II: Parity wise distribution in pregnant and non pregnant women with STI/RTI

Parity	Pregnant women with STI/RTI (Group IA)		Non Pregnant women with STI/RTI (Group II A)	
	No.	%	No.	%
0	28	20.9	22	13.7
1	32	23.8	37	22.9
2	34	25.5	44	27.3
>2	40	29.8	58	36.1
Total	134	100	161	100

Table- III: Sign and symptoms of STI/RTI in pregnant and non pregnant women

Sign and symptoms	Pregnant women with STI/RTI (Group IA)		Non Pregnant women with STI/RTI (Group IIA)	
	No.	%	No.	%
Discharge PV	115	85.8	130	80.7
Lower abdominal pain	103	76.8	116	73
Itching	60	44.7	74	45.9
Dyspareunia	13	9.7	25	15.5
Burning micturition	48	35.8	56	34.8
Skin lesion	2	1.4	3	1.8
Bleeding per vaginum/ Menstrual complain	50	37.3	83	51.5

Table- IV: Distribution and overall incidence of viral pathogens in pregnant and non pregnant women with STI/RTI

Pathogens	Pregnant women with STI/RTI (Group I A) (n=35)		Non Pregnant women with STI/RTI (Group II A) (n=28)		Prevalence of viral pathogens in pregnant women (N=483)	Prevalence of viral pathogens in non pregnant women (N=488)
	No.	%	No.	%		
HIV	20	57.2	14	53.8	4.1	2.8
HBsAg	11	31.4	7	26.9	2.3	1.4
HSV-2	3	8.6	4	15.4	0.6	0.8
HPV	1	2.8	1	3.8	0.2	0.2
Total	35		28			

Table- V: Incidence of non viral pathogens and mixed infections in pregnant and non pregnant women with STI/ RTI

Pathogens	Pregnant women with STI/RTI (Group I A)		Non Pregnant women with STI/RTI (Group II A)	
	No.	%	No.	%
Chlamydia trachomatis	12	2.5	18	3.7
N. gonorrhea	0	0.1	2	0.4
G. vaginalis	30	6.2	48	9.8
T. vaginalis	21	4.3	37	7.6
Candida	37	7.6	33	6.8
T. pallidum	2	0.4	0	0
CT+GV	6	10.2	9	12.2
GV+TV	13	22	13	17.6
GV+CA	20	33.8	22	29.7
TV+CA	10	16.9	14	18.9
CT+CA	5	8.4	6	8.1
HIV I&II+HSV-2	1	1.7	2	2.7
HIV I&II+ Candida	2	3.4	5	6.7
HBsAg+ TV	2	3.4	3	4.0

Table- VI: Pregnancy outcome among pregnant women with and without STI/RTI

Pregnancy outcome	Pregnant women with STI/RTI (Group I A) n=134		Pregnant women without STI/RTI (Group I B) n=349	
	No.	%	No.	%
Normal	20	14.9	201	57.6
Abortion	4	2.9	5	1.4
Preterm Delivery	64	47.8	39	11.2
IUGR	25	18.6	61	17.5
LBW	16	11.9	24	6.9
IUD	5	3.7	19	5.4
Total	134	100	349	100

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