# HIV seropositivity in reproductive tract infections in women attending MGM Hospital, Warangal

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**ABSTRACT**

**Background:** There exists a synergistic relation between reproductive tract infections (RTIs/STI) and HIV infection, both of which are associated with women of reproductive age group.

**Objectives:** The present study was undertaken to determine RTI/STI burden by eliciting socio demographic profiles, past gynaecological history, obstetric history, and laboratory based prevalence of total RTI/ STI and HIV infection in reproductive age group women and treatment seeking behaviour.

**Materials & Methods:** 260 patients in the reproductive age group of 15-50yrs with chief complaint of vaginal discharge were examined for reproductive tract infection by collecting vaginal, high vaginal and endocervical swabs. 5ml of blood was collected, serum separated and tested for HIV using WHO strategy, as per NACO guidelines.

**Results:** Syphilis was the most common RTI identified in 38.3% cases followed by Chlamydiasis in 30.7% of cases followed by Gardnerella vaginalis infection (bacterial vaginosis) constituting 18.1%, Candida albicans 13.3%, finally Trichomoniasis 7.6% of cases noted. HIV seropositivity was 24.6%.

**Conclusion:** The study concluded that prevalence of RTIs is high in women of reproductive age group making them vulnerable to acquisition of HIV infection. Early etiological diagnosis using simple conventional techniques is helpful in instituting specific treatment for complete cure of RTIs in prevention of HIV transmission.

**Keywords:** Reproductive tract infection, syphilis, HIV, Prevalence

## INTRODUCTION

Reproductive tract infections, a group of communicable diseases transmitted predominantly through sexual contact, compromise women's health more than that of men. They have become widespread today because of the changing social fabric and unconventional sexual behaviour. Their incidence is now reaching enormous proportions globally, with more than 6,85,000 people being infected everyday worldwide[1].

Incidence/prevalence data have a key role in control strategies for HIV and sexually transmitted infections (STIs). Moreover, comprehensive baseline information on the epidemiology of STIs, the proportion of symptomatic and asymptomatic infections and other associated factors are essential for the design, implementation and monitoring of successful targeted interventions[2], which are important in reducing the incidence of HIV infection[3]. In India, routine surveillance of these infections is not carried out and estimation of total incidence/prevalence is quite difficult. Lack of laboratory diagnostic facilities, limited resources, poor recognition of reproductive tract infections(RTIs/STIs) by the medical profession as a major public health problem, stigma and discrimination associated with STIs and poor attendance of STI patients especially women, in sexually transmitted disease(STD) clinics, are some of the main reasons for lack of RTI/STI data[4,5,6,7]. In general, data on the effects of STDs on HIV transmission are inadequate, partly because STD studies have focused on acquisition rather than transmission. Indeed, such focus is prevalent in HIV clinics throughout the world, and more attention needs to be given to viewing the individual with HIV infection not only as an individual who needs care for the disease, but as one who requires management to reduce the risk of transmitting virus to others[8].

## MATERIALS & METHODS

The present study group consisted of 260 women attending the gynaecological outpatient department, Government Maternity Hospital, Hanamkonda, Warangal and Department of sexually transmitted diseases, Mahatma Gandhi Memorial Hospital, Warangal during the period of 2011-2012. Hundred age matched healthy females formed the control group. History regarding symptomatology and relevant past history was elicited. Clinical evaluation was done including per speculum examination to assess the cervical status. After taking consent vaginal, high vaginal, endocervical swabs were collected during speculum examination.Swabs from base and edge of the ulcers were collected and 5 ml of whole blood

collected, allowed to clot and serum separated. From patients who were healthy in the lower genital tract but were clinically diagnosed as deep pelvic infection, only blood samples were collected.

Normal saline and 10% Potassium hydroxide (KOH) wet mounts and positive Amine test were done for motile trichomonads, pH was measured using narrow range pH paper from 4-7.5 in units of 0.5, by touching with vaginal swab specimens. Gram staining was done to confirm the diagnosis of Gardnerella vaginalis (bacterial vaginosis) by appreciating Clue cells and evaluating Nugent score[9]. Detection of candida was done by using 10% KOH wet mount and Gram staining giving the appearance of Gram positive budding yeast cells and pseudohyphae. Isolation of candida was done on Sabourauds dextrose agar(SDA) with chloramphenicol at 37$^0$C for 2 days. Cream coloured pasty growth was subjected to germ tube test and chlamydospore production by using corn meal agar to identify candida albicans. All the 260 serum samples were screened for syphilis by RPR test by using modified cardiolipin antigen, coated on microparticulate carbon particles. Chlamydia trachomatis IgG antibodies were detected employing a commercially available ELISA kit(Platelia Chlamydia IgG kit of BIORAD). Testing for HIV was done by using SD-BIOLINE HIV-I/II test. Serum samples which were positive with SD-BIOLINE HIV-I/II were subjected to two other test systems namely Combaids and HIV tridot.

**RESULTS**

64 serum samples were tested positive for HIV antibody from among 260 cases of reproductive tract infections studied. The percentage of seropositivity is 24.6% compared to 1% seropositivity in control group.

**Table No.1**

Based on aetiology, maximum percentage of HIV seropositivity(38.3%) was seen among patients with Syphilis(RPR positive >32 dilutions). Next to Syphilis highest percentage of seropositivity seen among Chlamydial genital infections (30.7%), Gardnerella vaginalis having the percentage of 18.1%, Candida albicans is having 13.3% seropositivity. Finally Trichomonas vaginalis was showed 7.6% seropositivity.

**Table No.2**

Maximum percentage of HIV seropositivity is seen among 31- 40 years of age group (31.8%). Next is15-20 years of age group (31.5%). followed by 21-30 years of age group (22.2%). and lastly above 40 years age group (12.5%). Highest HIV seropositivity is seen in daily wage labourers (28.9%), 28.5% with commercial sex workers, 27.7% with agriculturists, finally least percentage with house wives (11.5%). In relation to literacy maximum percentage of cases were seen in illiterate group (29.4%). Based on the locality, maximum percentage is seen among urban population (33.3%) compared with rural patients (21.2%).

**Table 1: Seropositivity percentage of HIV in case and control groups**

| Group | Number of Cases Studied | Number of HIV seropositive cases | Percentage |
|---|---|---|---|
| RTI (Test group) | 260 | 64 | 24.6% |
| Control | 100 | 1 | 1% |

**Table 2: HIV seropositivity among test group based on aetiology**

| Sl No. | Aetiology | Number of Cases Studied | Number of HIV seropositives | Percentage |
|---|---|---|---|---|
| 1 | Candida albicans | 30 | 4 | 13.3% |
| 2 | Trichomonas vaginalis | 26 | 2 | 7.6% |
| 3 | Gardnerella vaginalis | 22 | 4 | 18.1% |
| 4 | RPR Positive > 32 dilutions | 120 | 46 | 38.3% |
| 5 | Chlamydia seropositive | 26 | 8 | 30.7% |
| 6 | Other Bacterial infections | 36 | - | - |

**DISCUSSION**

RTIs, a major public health problem worldwide, are the cause of one-eighth of all human suffering. In demographically developing countries, RTI/STI excluding HIV infection account for 8.9 percent disease burden in women aged between 15 and 45 years[10]. Advances in the field of RTI/STIs have been fuelled to a large extent by the HIV/AIDS pandemic. The fact that married women suffer more frequently from these infections is supported by our findings and similar reports from other surveys[11,12]. Vaginal discharge is the most common presenting symptom of women with RTIs[13,14]. Other common complaints were those of lower abdominal pain associated with or without sexual intercourse, low backache, sores, blisters, swollen glands in the groin, cauliflower like growths on genitals[15].

The association of HIV with candida albicans in the present study is 13.3%. In the study conducted by Cu-Uvins et.al.[16] in 1999 in USA, there was 3% of prevalence of candidial vaginitis in HIV seropositive women. Another retrospective study was conducted by Eduardo Calore et. al.[17] in 1995 in Brazil. They studied cytological abnormalities in cervicovaginal smears of 147 HIV seropositive women. They observed that in 19 cases candida albicans was isolated from vagina giving a

percentage of 12.9%. Since all the previous studies referred above are retrospective studies, the present study cannot be compared with them.

Among 26 patients with Trichomonas vaginitis studied two were seropositive (7.6%) in the present study. Moodley et. al.[18] 2002 conducted a large survey of 598 women and found that prevalence of HIV infection increased linearly with increasing Nugent score. The prevalence of T. vaginalis increased suddenly from 12% in patients with a score of 3, to 33% in patients with a score of 4 and remained at this level at higher scores. Similar observation is not noticed in the present study, probably because the study group is very small to deduce any significant inference.

The present study showed 4 HIV seropositive cases (18.1%) among 22 women infected with Gardnerella vaginalis. Gardnerella vaginalis is highly associated with the syndrome of bacterial vaginosis. No single organism is responsible for the syndrome of bacterial vaginosis. However, Mobiluncus, bacteriodes, Gardnerella vaginalis and Mycoplasma hominis have been independently associated with bacterial vaginosis. The prevalence of these organisms is significantly higher among women with bacterial vaginosis than among normal women. The concentration of these organisms is one hundred to one thousand times higher in bacterial vaginosis (Panja 1998)[19]. Moodley et. al.(2002) found a relationship between T. vaginalis and bacterial vaginosis. They stated that vaginal discharge is usually of mixed aetiology. They opined that T. vaginalis infection changes the normal vaginal flora and this predisposes to bacterial vaginosis. Wang et. al.[20] in their study in 2001 in Seattle USA found a reduction in HIV RNA in the vagina after treatment of candida vaginitis and Trichomonas vaginitis but no change was observed in vaginal HIV RNA after treatment of bacterial vaginosis. In the study of Bukusi et. al[21] 1999 in Nairobi in which statistical data were not presented, it was stated that there is relationship between bacterial vaginosis and CD4 counts of less than 400 / µl in HIV I infected women. They observed that outpatient treatment of bacterial vaginosis was successful regardless of HIV serostatus of the patient. In the study of Cohen et. al.[22] (1999) bacterial vaginosis could be detected in 43% of women with reproductive tract infections. In another retrospective study conducted by Eduardo et. al. (1995) in Brazil, Gardnerella vaginalis was isolated in 12.9% of HIV seropositive women.

In the present study 46 among 120 RPR positive women(significant titers) were HIV seropositive, with the percentage of 38.3%. RPR test is chosen for serodiagnosis of syphilis and preferred over other tests because it is a more sensitive indicator of ongoing infection process. In the present study, among all the RTIs, syphilis has strongest association with HIV, as evidenced by highest percentage seropositivity. Kamya et. al.[23] studied genital ulcer disease in Uganda in 1995. According to them genital ulcer disease is a high risk factor for transmission of HIV. In the study of Cu-Uvin et. al 1999, there was 8% prevalence of syphilis among HIV seropositive women which is less compared to the study of Klugman et. al.[24] which showed a prevalence of 33% indicating that among black women syphilis is more prevalent among women in USA where Cu-Uvin and others conducted their study.

In the present study of 26 chlamydia seropositive women 8 were seropositive for HIV I, giving a percentage of 30.7%. The association of Chlamydia and HIV is next only to Syphilis and HIV, necessitating compulsory RPR testing and Chlamydia IgG testing among all the patients attending gynaecology outpatient departments. As these two diseases seem to be more associated with HIV than others, prompt diagnosis and effective treatment of genital chlamydiasis and syphilis in women can contribute to a great deal in controlling the spread of HIV in women. The available literature shows a retrospective study of prevalence of Chlamydia trachomatis in HIV seropositive women. The percentages varied from 3.4 (Eduardo Calore et. al. 1995) to as much as 95% (Klugman et. al. 1991) indicating a very high prevalence of chlamydial IgG among black women attending STD clinics in South Africa. As subclinical PID is said to be present in 27% of women with Chlamydia trachomatis (Wiesenfeld et. al.[25] 2002), it is all the more important to screen for Chlamydia infection among all sexually active women, whether symptomatic or asymptomatic. Subclinical PID is defined as a state in which the women are asymptomatic but there is evidence of histologic endometritis.

## CONCLUSION

As evidence in the present study, women with RTIs are more prone for HIV infection than their healthy counter parts. RTIs not only increase the risk for HIV, but also result in reduced work efficiency, infertility, bad obstetric history, increased childhood mortality resulting in an overall negative moral and economic effect in the household. This risk group needs to be informed, educated, diagnosed and treated effectively. There is an urgent need in the community to effectively implement partner notification and complete treatment to the infected spouse so as to reduce the disease burden in women.

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