International Journal of Medical and Pharmaceutical Research
Website: https://ijmpr.in/ | Print ISSN: 2958-3675 | Online ISSN: 2958-3683
NLM ID: 9918523075206676
Volume: 4 Issue:3 (May-June 2023); Page No: 608-616

Original Article

A Study of Sexually Transmitted Infections among Pregnant Women Attending STD Clinic in a Tertiary Care Centre

Logeshwari J[1], Girishkumar M Chalawadi*[1], JVDS Prasad[1], A. Venkatakrishna[1]

[1] Department of Dermatology, Venereology and Leprosy, Osmania Medical College, Hyderabad, 500095, India

ABSTRACT

Background: Sexually Transmitted Infections (STIs) have a deep impact on sexual and reproductive health. Among 27 million pregnant females each year, the prevalence of STIs are higher because of hormonal and immunological changes during pregnancy. STIs in pregnancy are usually under diagnosed and is a crucial reason behind morbidity and mortality within the developing countries. So, whenever an infection occurs in pregnancy, an understanding of the alteration within the disease course and also the possibility of transmission to the fetus is vital.
Objectives: The present study was conducted to know about the different types of STIs in pregnant women attending our STI clinic in a tertiary care centre in South India over a period of 18 months.
Methodology: A cross sectional study was conducted with a detailed history, clinical examination and relevant investigations in 110 pregnant women and data were analysed.
Results: Among 110 subjects, Vulvovaginal candidiasis was more common with 50(45.5%) cases, followed by 36(32.7%) sero-syphilis in this study. 9(8.2%) were HIV reactive and 1(0.9%) had Hepatitis-B infection.

Key Words: *STI, Pregnancy, Candidiasis, Syphilis, Herpes*

***Corresponding Author**
Girishkumar M Chalawadi
Department of Dermatology, Venereology and Leprosy, Osmania Medical College, Hyderabad, 500095, India

AIMS AND OBJECTIVES:

1) To study the different types of Sexually Transmitted Infections among pregnant women.
2) To study the clinical pattern of these Sexually Transmitted Infections with socio demographic profile like age, socioeconomic status and education.

MATERIALS AND METHODS

After obtaining ethical committee permission, a cross sectional study was conducted in all the pregnant women attending our STI outpatient department in a tertiary care centre in South India. After counselling and written informed consent, data was collected from patients over a period of 18 months with a minimum sample size of 100. In each case, a detailed history which includes their age, socio-economic status, marital status, sexual and obstetric history were taken along with thorough clinical examination. Serological investigations such as VDRL, HIV, HSV, HBs Ag, HCV were done for every patient. Swabs for KOH mount, Gram stain, Giemsa stain, culture and Tzanck smear were done if required.

RESULTS

During the 18months study, a total of 110 pregnant women diagnosed with STIs were included. Data were entered into Microsoft Excel (Windows 7; Version 2007) and analyses done. Among 110 subjects, 65(59.1%) were in the age group of 21-25years. The youngest and the oldest women in this study were 18 and 35 years respectively. Majority 32(29.1%) studied up to primary education and 19(17.3%) were illiterate. Most of them were housewife 63(57.3%) in this study. According to Modified Kuppuswamy scale, majority were in lower middle socio economic status 59(53.6%). Among 110women, 107(97.3%) were married and 3(2.7%) were divorced. Most of them presented during fourth month of pregnancy (25.5%), in their second trimester 64(58.2%) in this study. Genital discharge 52(47.3%) was the most common presenting complaint followed by VDRL positivity tested as a part of antenatal care came for screening 31(28.2%), genital growth 11(10%), genital lesions 8(7.3%), genital ulcers 6(5.5%) and HIV reactive for screening 2(1.8%). Out of 110 women, 24(21.8%) had bad obstetric history. 105(95.5%) had only marital contact, 3(2.7%) divorcee gave history of extramarital contact and 2(1.8%) had pre-marital contact. ***(Table 1)***

Table 1: Socio-demographic characteristics of patients

Characteristics	Total No.	Percentage
Age (in years)		
<20	16	14.5
21 - 25	65	59.1
26 - 30	25	22.7
31 - 35	4	3.6
Mean(SD) of age = 24.02 (3.20)		
Education		
Illiterate	19	17.3
Primary	32	29.1
Middle	21	19.1
High	19	17.3
Diploma	12	10.9
Graduate	7	6.4
Occupation		
Housewife	63	57.3
Unskilled	22	20.0
Skilled	12	10.9
Student	13	11.8
Socio-Economic Status		
Upper	4	3.6
Upper middle	3	2.7
Lower middle	59	53.6
Upper lower	33	30.0
Lower	11	10.0
Marital status		
Married	107	97.3
Divorced	3	2.7
Trimester		
First	18	16.4
Second	64	58.2
Third	28	25.5
Presenting complaints		
Genital lesions	8	7.3
Genital growth	11	10.0
HIV reactive for screening	2	1.8
Genital ulcers	6	5.5
VDRL reactive for screening	31	28.2
Discharge	52	47.3
Bad obstetric history		
Spontaneous abortions	17	15.5
Intrauterine death	3	2.7
Neonatal death	1	0.9
Infant death	3	2.7
Not significant	86	78.2
Sexual history		
Extramarital + Marital	3	2.7
Only marital contact	105	95.5
Premarital + Marital	2	1.8

Among 62 partners investigated, 37(59.7%) were non-reactive for VDRL, 36(58.1%) were reactive for TPHA and 9(14.6%) were reactive for HIV. Curdy white discharge was the most common clinical finding seen in 37(33.6%) women. On wet mount, 48(76.2%) had budding yeasts and pseudo-hyphae. On Potassium Hydroxide mount(KOH), 50(79.37%) had Pseudo-hyphae with budding yeasts. Most common isolated species was candida glabrata in 25(50%) women. 48(76.2%) diagnosed as vulvovaginal candidiasis in gram stain and 10(15.9%) had bacterial vaginosis according

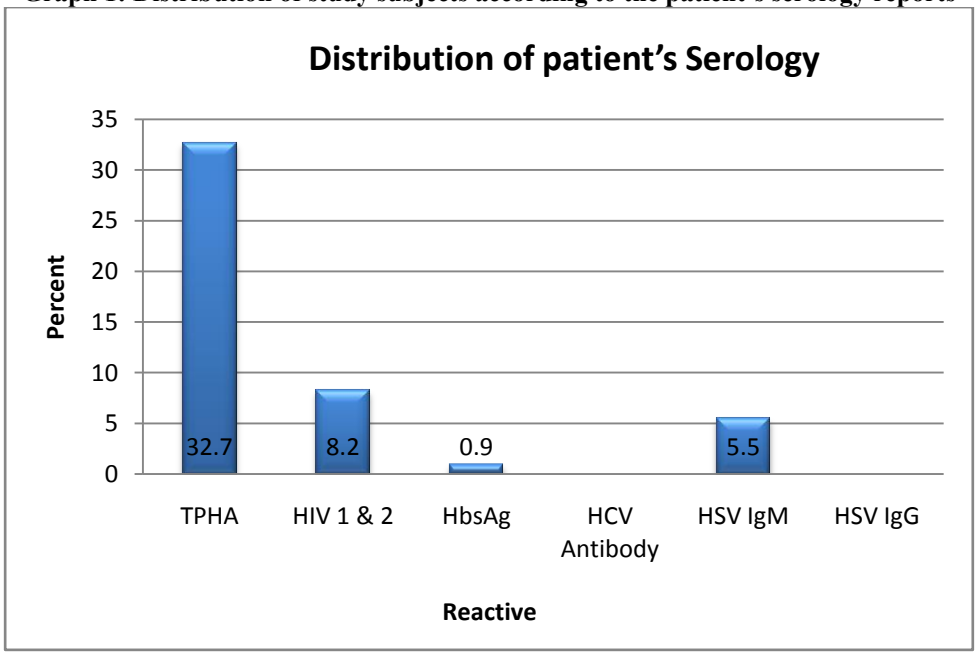
to Nugent's score. On Tzanck smear, 8(57.1%) had Henderson Peterson bodies and 6(42.9%) had multinucleated giant cells. ***(Table 2)***

Out of 110 subjects, 33(30%) pregnant women were reactive for VDRL, 36(32.7%) for TPHA, 9(8.2%) were seropositive for HIV, 6(60%) were reactive for HSV IgM and 1(0.9%) was reactive for HBsAg. 110(100%) were found to be non-reactive for HSV IgG and HCV antibody. ***(Graph 1)***

Table 2: Investigations of study subjects

Wet mount examination		
Findings	**Number**	**Percentage**
Pseudohyphae and budding yeasts	48	76.2
Clue cells	12	19.2
Motile trichomonads	3	4.8
KOH examination		
Pseudohyphae and budding yeasts	50	79.37
Negative	13	20.63
Candidal culture		
Candida albicans	17	34.0
Candida glabrata	25	50.0
Candida krusei	1	2.0
Candida tropicalis	7	14.0
Gram stain		
Bacterial vaginosis	10	15.9
Bacterial vaginosis + Vulvovaginal candidiasis	2	3.2
Vulvovaginal candidiasis	48	76.2
Negative	3	4.8
Tzanck smear		
Henderson Peterson bodies	8	57.1
Multinucleated giant cells	6	42.9

Graph 1: Distribution of study subjects according to the patient's serology reports



Among 110 patients, 50(45.5%) were diagnosed as vulvovaginal candidiasis. ***(Graph2)*** Out of 36(32.7%) patients with syphilis, 34(30.9%) had latent syphilis and 2(1.8%) had secondary syphilis. 9(8.2%) had HIV and 1(0.9%) had Hepatitis-B. ***(Table 3)*** Among nine HIV positive women, 3(33.3%) had candidiasis, 2(22.2%) had genital herpes, 2(22.2%) had genital warts, bacterial vaginosis in 1(11.1%) women and 1(11.1%) had molluscum contagiosum. ***(Graph 3)*** 4(26.7%) had concomitant vulvovaginal candidiasis and latent syphilis. On follow up of syphilis patients after delivery, children of four syphilis mothers were found to have congenital syphilis with reactive TPHA.

Graph 2: Distribution of study subjects according to the diagnosis

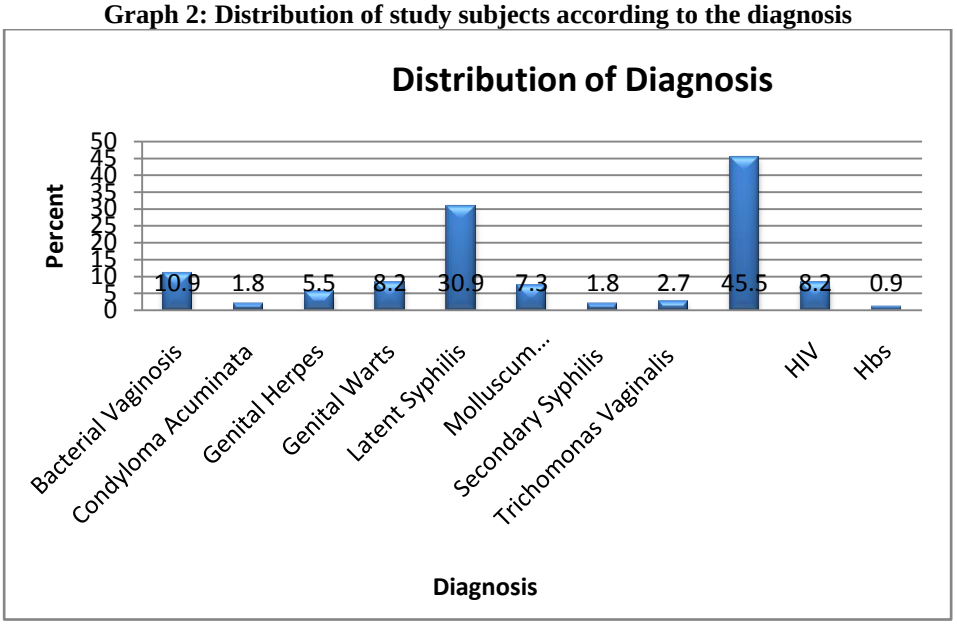
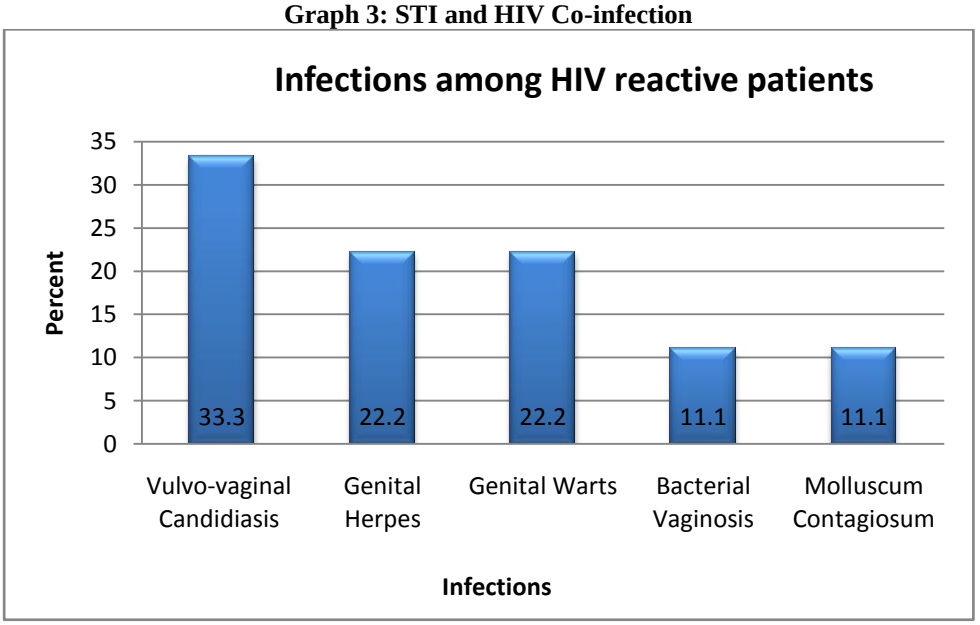


Table 3: Distribution of study subjects according to Diagnosis

Diagnosis		
Characteristics	**Frequency**	**Percentage**
Bacterial vaginosis	12	10.9
Condyloma acuminata	2	1.8
Genital herpes	6	5.5
Genital warts	9	8.2
Latent syphilis	34	30.9
Molluscum contagiosum	8	7.3
Secondary syphilis	2	1.8
Trichomonas vaginitis	3	2.7
Vulvovaginal candidiasis	50	45.5
HIV	9	8.2
Hepatitis-B	1	0.9

Graph 3: STI and HIV Co-infection



CLINICALPICTURES

Figure1: Discharge of Candidiasis and Genital Molluscum contagiosum

Figure 2: Genital herpes

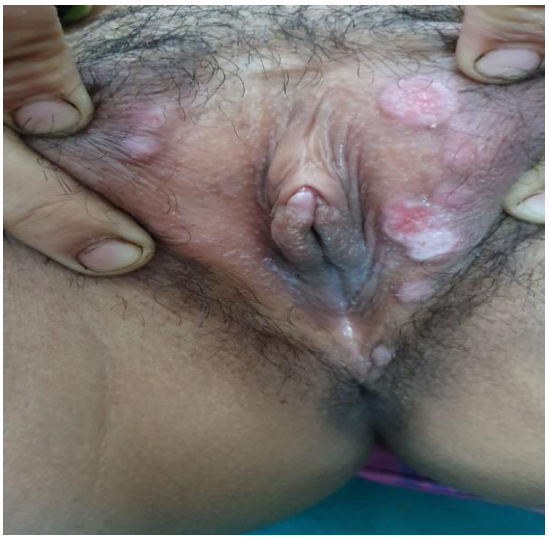


Figure3: Condyloma lata lesions of secondary syphilis

Figure4: Condyloma acuminata

DISCUSSION

In present study, STIs were more common in the age group between 18 to 35 years with a mean of 24.02(3.20). Majority 65(59.1%) belongs to 21 to 25 years because of maximum sexual activity during this age. Followed by 25(22.7%) between 26-30 years, 16(14.5%) in less than or equal to 20 years and least were between 31 to 35 years 4(3.6%). According to Sultan et al study, maximum 102(52.3%) pregnant women were 20 to 24 years of age followed by 61 (31.2%) women in between 25 to 29 years of age with a mean age of 24.8 years which is similar to this present study [1]. According to Williams study, which was conducted at United states, showed results with majority 66.0% of their study population aged more than or equal to 25 years which is different from this study, which can be attributed because of change in culture and behaviour [2]. Almost all infections in this study were more prevalent in the age group between 21 to 25 years except trichomonas vaginitis. Patients with Trichomonas vaginitis were more common among 26 to 30 years of age, which is similar to Nourian study [3]. In present study, most of them studied up to primary education 32(29.1%) and 19(17.3%) were illiterate. Most of the infections were common among primary class 32(29.1%) followed by middle class 21(19.1%) of education. Presence of STI was found to be higher in illiterate women (49.74%) in Sultan study [1]. Present study differs from Williams study, where majority of women had some college education (57.3%) [2]. STIs decreases in educated women indicating their awareness on sexual education and practice of safe sex. Among 110 women in the present study, 63(57.3%) were housewife, 22(20%) had unskilled occupation, 13(11.8%) were students and 12(10.9%) had skilled occupation. According to Nourian study, most of the subjects had been housewife which coincides to the present study [3]. According to modified Kuppuswamy scale, most of the study population were from lower middle class 59(53.6%), followed by upper lower class 33(30%). According to study by Sultan et al, majority of infected

women with 75.4% were from lower socio-economic status which is similar to our study [1]. This lower SES can be associated with poor nutrition and antenatal care which can affect the course of STIs in pregnancy. Socioeconomic status appears to have a bilateral effect, as poverty increases the risk of STI and also these STIs decreases the economic productivity. Among 110 women in this study, 107(97.3%) were married and 3(2.7%) were divorced. According to Williams study, the prevalence of STIs were common among unmarried women (41.3%) compared to married women (58.7%) which differs from present study because of their culture and tradition [2]. 105(95.5%) women had only marital contact and denied history of premarital or extramarital contacts. Out of remaining five women, 3(2.7%) divorcee gave history of extramarital contact, 2(1.8%) had pre-marital contact. This signifies the importance of screening the partners along with pregnant women during their antenatal visits as promiscuity plays a major risk factor for acquiring STIs.

In this study, most of the women were referred from nearby maternity hospitals for screening of STIs and few came directly to STD clinic along with their partners mostly during fourth month of their pregnancy 28(25.5%). Most of them 64(58.2%) presented during second trimester followed by 28(25.5%) in third trimester and least 18(16.4%) during first trimester of pregnancy. According to study by Sultan et al which was conducted at Bhopal with 500 women, 45(9%) were enrolled in first trimester, 143(28.6%) in second trimester and 312(62.4%) women in their third trimester with majority of them in third trimester which is different from present study [1]. In Williams study at united states, antenatal care was initiated in first trimester in 11,136 (89%) pregnant women and 1605(11%) after first trimester which is different from present study [2]. This forms an important factor as early diagnosis and treatment of STI with good antenatal care can lead to better outcome in pregnancy. In this study, 24(21.7%) women had bad obstetric history in their previous pregnancies. Majority had one spontaneous abortion 13(11.8%). According to Ghaddar study, women with previous miscarriage were more likely to develop Candida krusei infection with statistically significant risk of abortions [4]. It is therefore recommended that all antenatal cases with such bad obstetric history should be considered as a high risk group and should be screened for all STIs in early pregnancy to avoid fetal morbidity and mortality.

In present study, majority presented with genital discharge 52(47.3%) followed by 31(28.2%) VDRL reactive patients tested as a part of ANC screening came to our STD clinic for confirmatory test, 11(10%) for genital growth, 8(7.3%) for genital lesions, 6(5.5%) for genital ulcers and 2(1.8%) HIV positive patients came for screening. Majority in this study group had presented with symptoms. According to Sultan et al study, majority of pregnant women 155(79.48%) in them were having one or another symptom and remaining 40(20.51%) women were asymptomatic which is similar to our study. The most common complaint with which they present is vaginal discharge 54(27.6%) followed by discharge along with itching 47(24.1%) [1]. According to Joseph et al, out of 78 pregnant women who were diagnosed with one or more STIs at their first ANC visit, 27(35%) reported having had one or more STI symptoms during pregnancy with abnormal discharge (n = 15) as the most common complaint similar to our present study [5]. Thus, routine antenatal visits and screening will help in the detection of asymptomatic infections in pregnant women in their early trimesters leading to decrease in the adverse outcomes of pregnancy.

During clinical examination, most of the women 37(33.6%) had thick curdy white discharge, 16 (14.5%) had mucoid discharge and 3(2.7%) had foul smelling frothy discharge. 8(7.3%) had genital ulcers, 5(4.5%) had molluscum, 9(8.2%) had genital warts and 2(1.8%) had condyloma acuminata. 27(24.5%) did not have any genital lesions on examination. One women in this study, had multiple annular hyperpigmented macule with dusky centre resembling target lesions which were noted over palms and dorsum of bilateral feet. And multiple, discrete, non-tender, firm inguinal lymph nodes were palpable on both sides with classical features of secondary syphilis indicating high risk of perinatal transmission.

In present study, 62 partners were investigated out of 110 pregnant women. Among which 37(59.7%) were non-reactive and 25(40.3%) reactive for VDRL; 36(58.1%) reactive and remaining 26(41.9%) were non-reactive for TPHA; 53(85.4%) were non-reactive and 9(14.6%) were reactive for HIV-1, 2. In present study, 33(30%) pregnant women had reactive VDRL. Majority had 1:4 dilutions 15(13.6%). 8(7.3%) had 1:2, 5(4.5%) had 1:8, 4(3.6%) had 1:16 and 1(0.9%) had 1:32 dilutions. Out of 110 subjects, 33(30%) were reactive for VDRL, 36(32.7%) had reactive TPHA, 9(8.2%) were seropositive for HIV, 6(60%) were reactive for HSV IgM and 1(0.9%) was reactive for HBsAg. In this study, 100% found to be non-reactive for HCV antibody and HSV IgG antibody. Thus, serology helps in detecting asymptomatic viral shedding in pregnancy.

On wet mount, 48(76.2%) had budding yeasts & pseudo-hyphae, 12(19.2%) had clue cells and 3(4.8%) had motile trichomonads.50(79.37%) demonstrated budding yeasts and pseudo hyphae and remaining 13(20.6%) were negative for fungal structures on KOH mount. 48(76.2%) and 10(15.9%) pregnant women had vulvovaginal candidiasis and bacterial vaginosis respectively on the gram stain. 3(4.8%) were tested negative and 2(3.2%) had concomitant bacterial vaginosis and vulvovaginal candidiasis together indicating that gram stain examination was more sensitive than wet mount examination in detecting vulvovaginal candidiasis. Gram negative intracellular diplococci indicating neisseria gonorrhoea and plenty of leukocytes of more than 10 per high power field suggesting chlamydial infection were not found in the present study. Similar to Ghaddar study, candida was the most common organism isolated followed by bacterial vaginosis and trichomoniasis. However, Group B streptococcus and staphylococcus were not isolated in the present study [4]. Most common isolated species were 25(50%) candida glabrata, indicating that non-albicans species were common in our study which is similar to Ghaddar study [4]. Emergence of non-albicans species may be due to

widespread and inappropriate usage of anti-fungals, self medications and repeated treatments for candidiasis, long term maintenance treatment and the use of single-dose regimens.

In this study, 50(45.5%) had vulvovaginal candidiasis. Out of 36(32.7%) patients with serosyphilis, 34(30.9%) had latent syphilis and 2(1.81%) had secondary syphilis. 12(10.9%) had bacterial vaginosis, 9(8.2%) had genital warts, 2(1.8%) had condyloma acuminata, 8(7.3%) had molluscum, 6(5.5%) had herpes genitalis, 3(2.7%) had trichomonas vaginitis, 9(8.2%) had HIV and 1(0.9%) had Hepatitis B infection. According to Sultan et al, 21(10.76%) were having viral infection, 119(61.03%) were having bacterial or fungal or parasitic STI and 55(28.2%) had mixed infections which is similar to present study [1]. On follow up, children of four syphilitic mothers were found to have congenital syphilis. Out of four children, 2(50%) had 1:2 VDRL titres and all 4(100%) had reactive TPHA. According to Teasdale et al study, overall incidence rate of gonorrhoea and trichomoniasis were highest which differs from our study [6]. In Sivanu et al study, among 31 patients, infective aetiology was seen in 15 cases (48%), non-infective aetiology was seen in 3 cases (10%) and no STIs were seen in 13(42%) patients. Vulvovaginal candidiasis was most common among pregnant females in 9(60%) patients which is similar to present study followed by genital warts in 3(20%) followed by molluscum contagiosum, herpes genitalis and oral candidiasis among infective causes. Non-infective causes such as vulval lymphangiectasia, epidermoid cyst and vascular swelling were not seen in our study [7].

Sexually Transmitted Infections usually coexist in an individual. In present study, majority 4(26.7%) had both vulvovaginal candidiasis and latent syphilis together. Among nine HIV reactive women, 3(33.3%) had candidiasis, 2(22.2%) had genital herpes, 2(22.2%) had genital warts, 1(11.1%) had bacterial vaginosis and 1(11.1%) had molluscum; none of them had short incubation period bacterial STIs. This differs from Joseph study, where chlamydia was the most common infection in pregnant women with HIV [5]. Thus, the pattern of STIs during pregnancy varies according to the populations examined in the different published studies.

Limitations:

1) Limitations of this cross sectional study was the small sample size. So, a larger study is required to calculate the exact prevalence of STIs in pregnant women.
2) Associations between diabetes and candidiasis in pregnancy were not included in this study.
3) Serological tests to detect gonorrhoea, chlamydia, rubella, cytomegalovirus infection in pregnant women were lacking in this study.

CONCLUSION

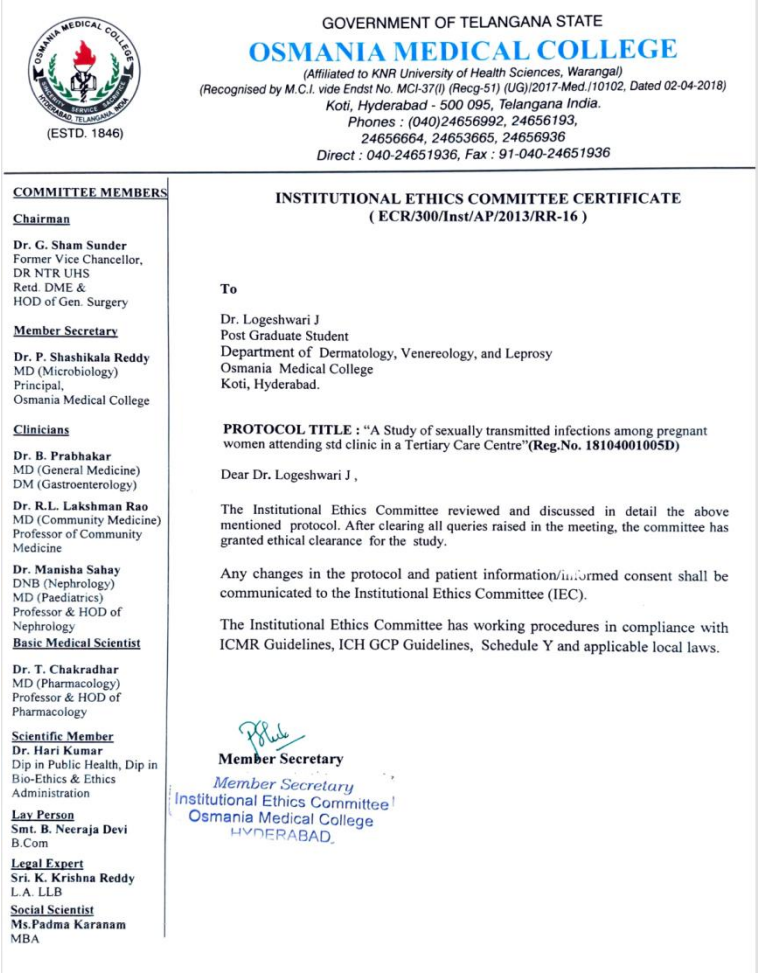
Antenatal patients are a group of population in the sexually active age group, hence used as a reference point for STI prevalence in the women. There is a high prevalence of STIs in pregnant women because of the depressed cell mediated immunity and disruption in the normal vaginal flora during pregnancy. Most of these infections are asymptomatic, hidden and hence under diagnosed. Also these infections have an adverse effect on the outcome of pregnancy by affecting both the mother and also the fetus.

In our study, most common STI was Vulvovaginal candidiasis 50(45.5%), followed by syphilis 36(32.7%) and four children were found to have congenital syphilis. Hence, this study highlights the importance of screening for all major STIs during the antenatal visits in the pregnant women along with their sexual partners which helps in early diagnosis of these infections. In addition to screening, education, counselling and effective treatment can help prevent further transmission of these infections.

Ethics approval and consent to participate:

- Ethics approval and consent was obtained.

If your manuscript does not report on or involve the use of any animal or human data or tissue, please state “Not applicable” in this section – Not applicable



GOVERNMENT OF TELANGANA STATE

OSMANIA MEDICAL COLLEGE

(Affiliated to KNR University of Health Sciences, Warangal)
(Recognised by M.C.I. vide Endst No. MCI-37(I) (Recg-51) (UG)/2017-Med./10102, Dated 02-04-2018)
Koti, Hyderabad - 500 095, Telangana India.
Phones : (040)24656992, 24656193,
24656664, 24653665, 24656936
Direct : 040-24651936, Fax : 91-040-24651936

(ESTD. 1846)

COMMITTEE MEMBERS

Chairman

Dr. G. Sham Sunder
Former Vice Chancellor,
DR NTR UHS
Retd. DME &
HOD of Gen. Surgery

Member Secretary

Dr. P. Shashikala Reddy
MD (Microbiology)
Principal,
Osmania Medical College

Clinicians

Dr. B. Prabhakar
MD (General Medicine)
DM (Gastroenterology)

Dr. R.L. Lakshman Rao
MD (Community Medicine)
Professor of Community Medicine

Dr. Manisha Sahay
DNB (Nephrology)
MD (Paediatrics)
Professor & HOD of Nephrology

Basic Medical Scientist

Dr. T. Chakradhar
MD (Pharmacology)
Professor & HOD of Pharmacology

Scientific Member
Dr. Hari Kumar
Dip in Public Health, Dip in Bio-Ethics & Ethics Administration

Lay Person
Smt. B. Neeraja Devi
B.Com

Legal Expert
Sri. K. Krishna Reddy
L.A. LLB

Social Scientist
Ms.Padma Karanam
MBA

INSTITUTIONAL ETHICS COMMITTEE CERTIFICATE
(ECR/300/Inst/AP/2013/RR-16)

To

Dr. Logeshwari J
Post Graduate Student
Department of Dermatology, Venereology, and Leprosy
Osmania Medical College
Koti, Hyderabad.

PROTOCOL TITLE : "A Study of sexually transmitted infections among pregnant women attending std clinic in a Tertiary Care Centre"(Reg.No. 18104001005D)

Dear Dr. Logeshwari J ,

The Institutional Ethics Committee reviewed and discussed in detail the above mentioned protocol. After clearing all queries raised in the meeting, the committee has granted ethical clearance for the study.

Any changes in the protocol and patient information/informed consent shall be communicated to the Institutional Ethics Committee (IEC).

The Institutional Ethics Committee has working procedures in compliance with ICMR Guidelines, ICH GCP Guidelines, Schedule Y and applicable local laws.

Member Secretary

Member Secretary
Institutional Ethics Committee
Osmania Medical College
HYDERABAD

List of abbreviations

STIs - Sexually Transmitted Infections
HIV - Human Immunodeficiency Virus
VDRL - Venereal Disease Research Laboratory
TPHA - Treponema Pallidum Haemagglutination Assay
HSV - Herpes Simplex Virus
HBsAg - Hepatitis B Surface Antigen
HCV - Hepatitis C Virus
KOH - Potassium Hydroxide Mount
SES - Socio Economic Status

Conflicts of Interest: "The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper."

Funding Statement: Not funded

Authors' contributions:

"J performed the clinical examination of the patients, analysed and interpreted the patient data. Chalawadi did the examination of the partners of the pregnant women and was a major contributor in writing the manuscript. All authors read and approved the final manuscript."

REFERENCES

1. Sultan S, Rachwani K. (2016). Study of sexually transmitted infections in pregnant women and its effects on pregnancy outcome. J. Evolution Med. Dent. Sci. 5(41):2553-2556
2. Williams CL, Harrison LL, Llata E, et al. (2018). Sexually Transmitted Diseases among Pregnant Women: 5States, United States, 2009-2011. Matern Child Health J. 22(4):538-545.
3. Nourian A, Shabani N, Fazaeli A, et al. (2013). Prevalence of Trichomonas vaginalis in Pregnant Women in Zanjan, Northwest of Iran, *Jundishapur J Microbiol*. 6(8):e7258.
4. Ghaddar N, Roz AE, Ghssein G, et al. (2019). Emergence of Vulvovaginal Candidiasis among Lebanese Pregnant Women: Prevalence, Risk Factors, and Species Distribution. *Infect Dis Obstet Gynecol*. vol 2019:1-8.

5. Joseph Davey DL, Nyemba DC, Gomba Y, et al. (2019). Prevalence and correlates of sexually transmitted infections in pregnancy in HIV-infected and uninfected women in Cape Town, South Africa. PLoS One. 14(7): e0218349.
6. Teasdale CA, Abrams EJ, Chiasson MA, et al. (2018). Incidence of sexually transmitted infections during pregnancy. PLoS ONE 13(5): e0197696.
7. Sivanu S, Babu M, Savadamoorthi SM. (2019). Study of genital dermatoses in pregnant females attending a tertiary care hospital. *Int J Res Dermatol*. 5:542-5.