

Seroprevalence of Syphilis among ANC and STD clinic attendees in a Tertiary Care Hospital in South India.

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Abstract: Syphilis is a sexually transmitted disease (STD), caused by *Treponema pallidum* subsp. *pallidum*. Syphilis affects nearly 1.36 million pregnant women, majority of these cases being concentrated in the developing countries. This hospital based retrospective study was conducted to understand the syphilis prevalence among ANC cases and STD clinic attendees in a tertiary care teaching hospital in south India. The data was collected by retrospective analysis of laboratory records over a period of one year from January 2017 to December 2017. Blood samples received from pregnant women attending antenatal clinics and STD clinic attendees were taken up for the study. All the serum samples were subjected to qualitative Rapid Plasma Reagin (RPR) test using standard procedures and the reactive samples were further tested by quantitative RPR and *Treponema Pallidum* Haemagglutination. Samples which were reactive by both qualitative RPR and TPHA were considered as seropositive for Syphilis. Out of the 6864 samples tested 145 were reactive for Syphilis by both quantitative RPR and TPHA. The overall seroprevalence in this study was found to be 2.1%. Syphilis seroprevalence among the ANC cases and STD clinic attendees were found to be 0.39% and 2.95% respectively. The higher seroprevalence was noted among the sexually active age groups (15-40 yrs). The seroprevalence of Syphilis was low among ANC cases when compared to STD clinic attendees. Among the STD clinic attendees males showed higher seroprevalence indicating high risk behavior (MSM) and unsafe sexual practices. Syphilis prevalence among high risk groups could be reduced by behavior modification, promoting safe sexual practices, enhanced case detection, treatment and follow up.

Key Words: Syphilis, Seroprevalence, ANC, STD clinic, RPR, TPHA.

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I. Introduction

Syphilis is a sexually transmitted disease caused by *Treponema pallidum* mainly through sexual intercourse and also by other modes such as blood transfusion and Mother-to-Child transmission. The World Health Organization (WHO) estimates that there are 6 million new infections every year globally¹. Syphilis is a serious public health problem because it can increase the risk of HIV acquisition by three-fold or more. Mother-to-child transmission of Syphilis can result in stillbirth, neonatal death, low-birth-weight, prematurity and congenital deformities. Over 9,30,000 pregnant women were infected with syphilis resulting in approximately 3,50,000 adverse birth outcomes including stillbirth in 2012². In 2012 there were 1,03,960 cases of maternal syphilis in India, with an estimated 16,324 cases of congenital syphilis³. The present study was aimed to know the seroprevalence of syphilis among different group of patients attending a tertiary care hospital.

II. Materials and Methods

This retrospective study was conducted in a tertiary care teaching hospital in south India by analyzing laboratory records over a period of one year from January 2017 to December 2017. Blood Samples received from pregnant women attending antenatal clinics and STD clinic attendees were taken up for the study. All the serum samples were initially tested by qualitative Rapid Plasma Reagin (RPR) test using standard procedures and the reactive samples were further tested by quantitative RPR and a specific treponemal test, *Treponema Pallidum* Haemagglutination (TPHA-Immutrep, Omega Diag, UK). Samples which were reactive by both qualitative RPR and TPHA were considered as seropositive for Syphilis.

III. Results

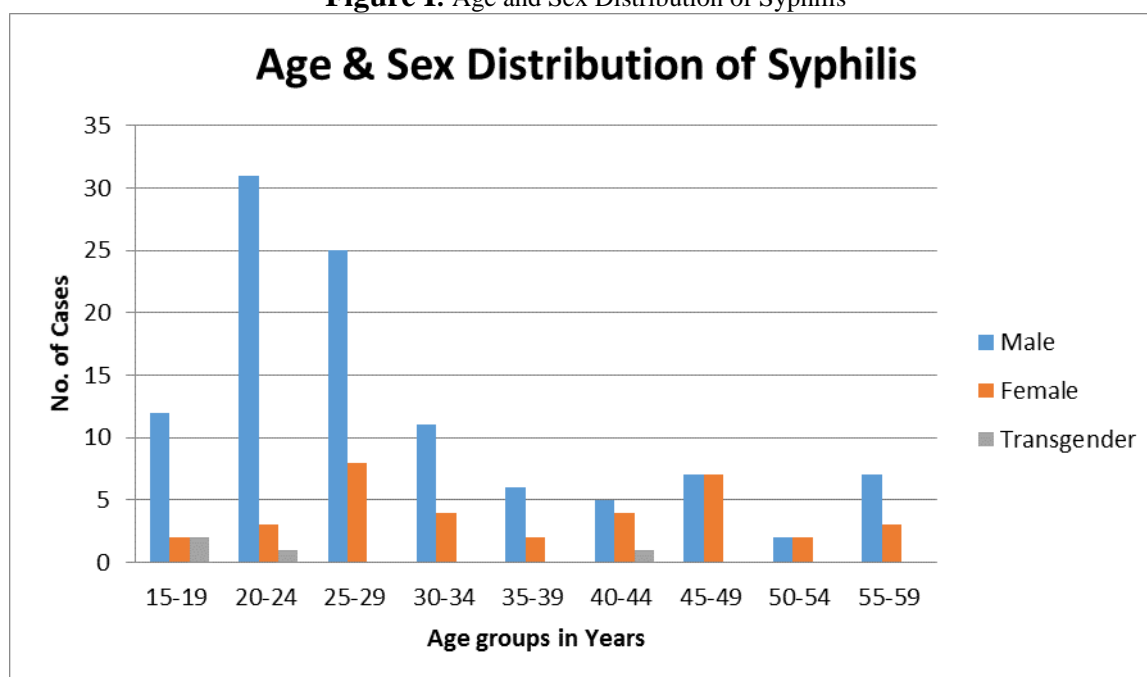
Among the 6864 samples tested for Syphilis, 145 samples were reactive by both quantitative RPR and *Treponema pallidum* Haemagglutination tests. The overall seroprevalence in this study was found to be 2.1%. Among the two populations studied, the seroprevalence was found to be higher in STD clinic attendees

136(2.95%), with males 106(4.25%), transgender 4(4.12%) and females 26(1.29%) (Table I). In Antenatal cases the seroprevalence was found to be 9(0.39%). Majority of Syphilis seropositivity was noted in the sexually active age groups 15-40 years 107(73%). Age and Sex distribution of Syphilis is given in Figure I.

Table I: Seroprevalence of Syphilis among ANC and STD clinic attendees.

Study Population	No. of cases Tested	No. of cases Reactive	Percentage %
Antenatal cases	2269	9	0.39%
STD Clinic Attendees			
Male	2492	106	4.25%
Female	2006	26	1.29%
Transgender	97	4	4.12%
TOTAL	6864	145	2.1%

Figure I: Age and Sex Distribution of Syphilis



IV. Discussion

The Seroprevalence of Syphilis varies among different regions of the world with many regions showing a rising trend of Syphilis in recent years. In the year 2016, a total of 27,814 cases of Primary & Secondary syphilis were reported in the United States (8.7 cases per 100,000 population). This rate represents a 17.6% increase compared with 2015 (7.4 cases per 100,000 population), and a 74.0% increase compared with 2012 (5.0 cases per 100,000 population)⁴. In England, there were 5,920 diagnoses of syphilis reported in 2016, a 12% increase relative to the year prior and the largest number of diagnoses reported since 1949⁵. In India the overall seroprevalence of Syphilis in ANC which represent the general population was 0.10% as estimated by the HIV sentinel Surveillance 2017⁶. In our study the Syphilis seropositivity among Antenatal cases was 0.39% which is higher than the national average of 0.10%. Similar finding of Syphilis seropositivity among ANC cases were reported by Bala et al⁷ (0.3%), S Chopra et al⁸ (0.26%), Parul punia et al⁹ (0.35%) and Sethi et al¹⁰ (0.48%). The Syphilis seropositivity among Antenatal cases in central India was 1.26% in a study reported by Prajakta S Barde et.al¹¹ which is higher than the national average. Syphilis seropositivity of 2.95% among STD clinic attendees were reported in our study. Various studies in India have reported Syphilis seropositivity among STD clinic attendees ranging from 1.89% to 11.7%^(7,8,9,10,11). The higher seropositivity among the STD clinic attendees is explained by the high risk behavior. Tao et al¹² reported a higher seroprevalence of Syphilis 45% among female sex workers in China. In USA, men having sex with men (MSM) accounted for the majority (58.1%) of reported primary and secondary Syphilis cases in 2016⁴. In England, the rise in seropositivity is attributed to increased number of MSM as well as increased testing in high-risk groups⁵. The highest seroprevalence was seen in the age group 20-30 years which is the sexually active age group, and hence is at risk of acquiring sexually transmitted diseases.

V. Conclusion

The epidemiology of Syphilis is changing worldwide with many regions reporting rise in the number of Syphilis cases. In the current study, even though the seroprevalence of Syphilis in ANC cases is quite low it is still a major concern because maternal syphilis if undiagnosed and untreated can cause adverse pregnancy outcomes such as abortions, stillbirths, low birth weight and congenital syphilis. Another important factor to be considered in pregnancy is the use of specific Treponemal tests for confirmation to rule out the Biological false positive reactions associated with non-specific tests (VDRL & RPR). The higher prevalence of syphilis among STD clinic attendees is attributed to increasing high risk behavior (MSM), unsafe sexual practices and increased testing for Syphilis. Syphilis prevalence among high risk groups could be reduced by behavior modification, promoting safe sexual practices, enhanced case detection, treatment and follow up. Since this was a hospital based study and may not reflect the true prevalence, a long term and large population based study would reflect the changing epidemiological trends and burden of Syphilis.

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