

## Epidemiological and Clinico Investigative Study of Syphilis Cases at A Tertiary Care Centre

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### ABSTRACT

**INTRODUCTION:** Syphilis is a disease of great chronicity caused by *Treponema pallidum*. The trends of syphilis among various groups has been showing a significant change from time to time due to changing sex behavioural pattern

**AIM:** This prospective study aims to analyse the epidemiology and trends of syphilis of the patients attending the department of venereology at a tertiary care hospital.

**MATERIALS AND METHODS:** The study was carried out by screening all the patients who attended the STD OPD with rapid plasma regain (RPR) test and point of care (POC) testing. Complete clinical history and examination of the patients who tested positive were done. All those patients were treated with Inj. Benzathine penicillin and were advised for follow up.

**RESULTS:** A total of 2400 serum samples were received. Out of this 88 were found to be reactive using RPR and 74(84%) were tested positive using point of care testing. Around 50(56.8%) of them were MSMs. 10 patients (11.36%) were co-infected with HIV. The predominant stage of presentation was late latent syphilis(47.5%). All the patients diagnosed with syphilis were treated with 2.4 million units of Inj. Benzathine penicillin and were advised for regular follow up. None of the followed up patients showed any increase in titre. Among the total 88 patients only 28 (31.8%) brought their partner for screening.

**CONCLUSION:** The clinical trend of syphilis has shown a constant change with late latent syphilis being more prevalent in the recent times and also the rising incidence among MSMs due to unsafe sex practices has contributed to the recent upsurge in the incidence of syphilis. Early diagnosis, treatment at the point of diagnosis and follow up along with partner screening may aid in bringing down the burden of syphilis.

**Keywords:** Syphilis, *Treponema pallidum*,

### INTRODUCTION:

Syphilis as defined by Stokes is a disease of great chronicity caused by *Treponema pallidum*, systemic from outset involving almost every structure of the body which may be completely asymptomatic or with florid manifestations transmissible to offsprings and laboratory animals, and is a great imitator treatable to the point of presumptive care<sup>(1)</sup>. The World Health Organization estimates 5.6 million new syphilis cases in women and men aged 15–49 years globally. Based on data for 2005 to 2012, the estimated pooled prevalence for syphilis the global estimate was 0.5% and the regional values ranged from 0.2% to 1.8 %<sup>(2)</sup>. The exact prevalence of syphilis is difficult to assess due to the stigma associated with the disease<sup>(3)</sup>.

Syphilis is classified as early infective and late non-infective syphilis. Early syphilis comprises of primary (chancre), secondary and early latent syphilis and late syphilis comprises of late latent, tertiary and quaternary syphilis. The trends of syphilis among various groups has been showing a significant change from time to time due to changing sex behavioural pattern. An early diagnosis, proper treatment and regular follow up and counselling can help decreasing the burden of syphilis in the society. This prospective study aims to analyse the epidemiology and trends of syphilis of the patients attending the department of venereology at a tertiary care hospital.

### MATERIALS AND METHODS:

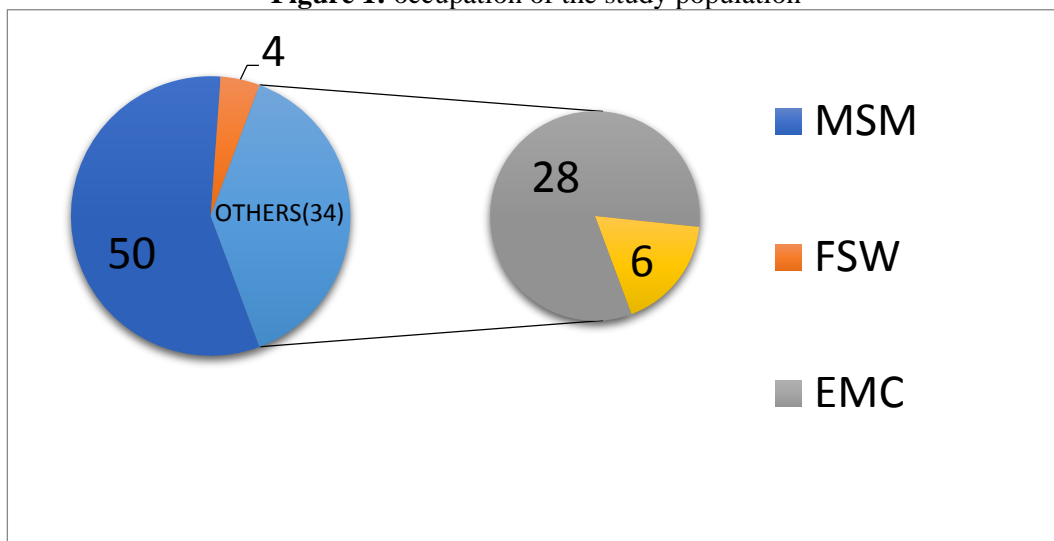
The study was a prospective study conducted in the department of venereology at a tertiary care centre in North Chennai over a period of one year. It was carried out by screening all the patients who attended the STD

OPD with rapid plasma regain (RPR) test. Patients who turned out positive for RPR testing were further confirmed using a point of care (POC) test, immunoblast rapid test assay. Complete clinical history and examination of the patients who tested positive were done. All those patients were treated with Inj. Benzathine penicillin depending on the stage of syphilis and were advised for follow up. Those who followed up were carefully monitored for cure of the disease or any relapse.

**RESULTS:**

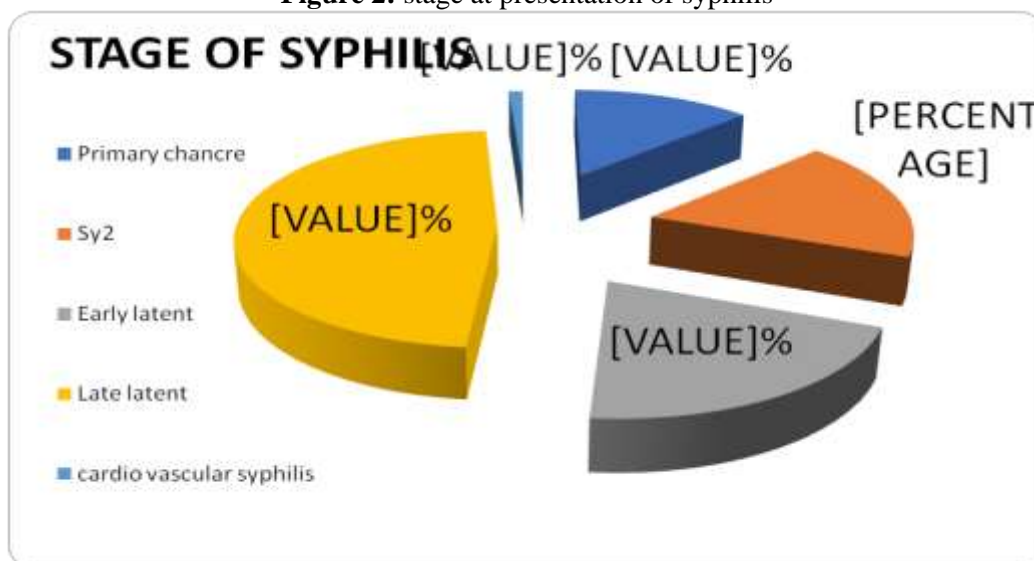
A total of 2400 serum samples were received. Out of this 88 were found to be reactive using RPR (3.6%). Of these 88, 74(84%) were tested positive using point of care testing and the remaining 14(16%) were false positive for RPR test. 54% of the cases were brought by NGOs, 18% were referred from other departments of the hospital and 18% of them came as direct walk in. Out of the total positive cases, 76(86.3%) were men and 12(13.7%) were women.

**Figure 1:** occupation of the study population



The predominant age group of presentation was 20-30 in both males (60.5%) and females (10%). Around 50(56.8%) of them were men having sex with men(MSM), 4(4.5%) were female sex workers (FSW) which included one antenatal patient. Among the remaining 34 cases, 28(31.81%) of them had extra marital affair, 6(6.81%) denied any high risk behaviour and all these 6 cases were females(Figure 1). Co-infection with HIV was seen in 10 (11.36%) patients among which 8 were MSM. The prevalence of other STIs in these patients was found to be 14.7% (9 urethral discharge, 3 herpes genitalis and 1 anogenital wart). The predominant stage of presentation was late latent syphilis(47.5%) followed by early latent(20.45%), Secondary syphilis (18%), primary chancre(13%) and cardiovascular syphilis(1.1%)( Figure 2).

**Figure 2:** stage at presentation of syphilis



The clinical picture of early syphilis are shown in Figure 3 and 4. All the patients diagnosed with syphilis were treated with 2.4 million units of Inj. Benzathine penicillin, dosage depending on the stage of syphilis and were advised for regular follow up. None of them developed hypersensitivity reaction. In a follow up period of 6 months 32(36.36%) patients lost follow up and among the 56 patients(63.4%) who followed up, 24 patients(46.15%) showed 4 fold decrease in titre and 6 patients(11.5%) turned non-reactive. None of the followed up patients showed any increase in titre. Among the total 88 patients only 28 (31.8%) brought their partner for screening. Among them 8 partners (28.5%) were RPR positive (Figure 5). Of these 28, only 2 partners were brought by MSM.



Figure 3: Chancre



Figure 4: Palmar syphilis

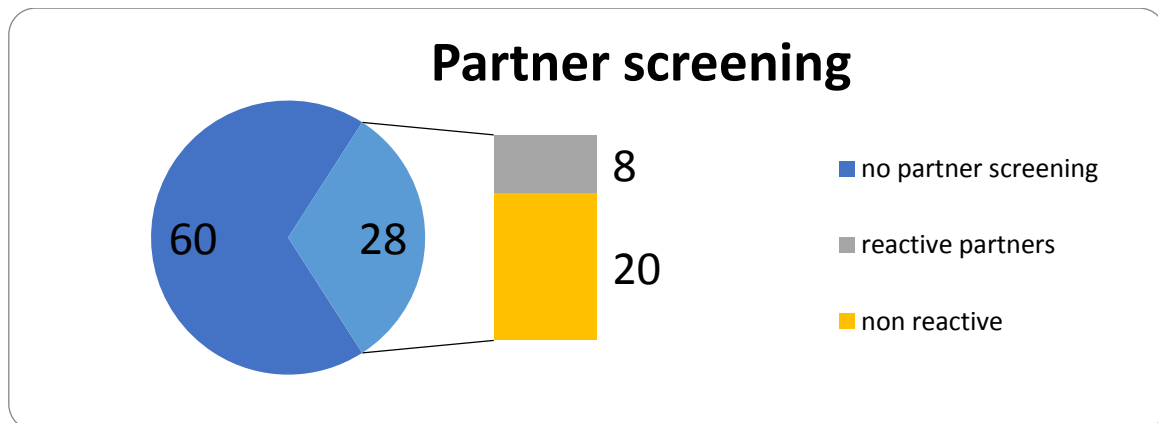


Figure 5: partner screening of positive cases

#### DISCUSSION:

A rise in the prevalence of syphilis has been observed in various studies in India and other countries<sup>(4)</sup>. In 1947, prior to the penicillin era, the incidence of primary and secondary syphilis was reported at 66.4 cases per 100,000 persons. Rates declined to 3.9 cases per 100,000 persons by 1956 due to the availability of penicillin, changes in sexual behavior, and public health measures. Studies published by the U.S. Public Health Service suggest that antibiotic therapy, whether intentional or not, contributed to this decline. Since the year 2000, rates of syphilis have been increasing in the US, UK, Australia, and Europe primarily among men who have sex with men who accounted for 87.3% of all syphilis cases in 2013 which is attributed to unsafe sexual practices<sup>(5)</sup>. Rates have increased in all racial groups in the past decade, but black and Hispanic men

have an overall higher rate than other racial groups. The overall highest rate was in the western United States, not in the South, for the first time in at least 50 years<sup>(6)</sup>. This has been attributed to socio-economic factors, behavioral changes, and increasing prevalence of AIDS<sup>(7)</sup>.

The prevalence of syphilis in our study was 3.6% which is similar to a previous study conducted by Maity *et al* in 2008 in west Bengal<sup>(8)</sup>. The disease was more predominant in men than women which was similar to many previous studies which also showed male predominance and also the report released by CDC for 2016<sup>(9)</sup>. The male-to-female ratio of primary and secondary syphilis peaked at 3.5:1 in 1980, largely due to an epidemic in white males who reported having at least one male sex partner<sup>(10)</sup>.

In USA this increasing trend has been attributed to increase in number of men having sex with men (MSM), which holds good for our study also, while in Europe this rising trend has been attributed to both increase in MSM and also higher testing rate of high risk groups. A rising trend of secondary syphilis has been reported in hospital- based studies from India in past by Ray *et al.*, (2006). This could be because of excessive reliance of preventive programs on the syndromic management of genital ulcer. According to a recent survey in 2016 by CDC, 47% of MSM had co infection with HIV which was higher than our study. Whereas in a study conducted by Munshi *et al* syphilis was the highest prevalent disease (16/118; 13.55%, 9 males and 7 females) among the HIV positive individuals<sup>(11)</sup>.

In our study the predominant stage of presentation was late latent stage. A similar increase in incidence of late latent syphilis was noticed in a study by pramil *et al*<sup>(12)</sup> where the incidence increased from 19% to 85.7% from 2008 to 2012. This rise can be attributed to the missing out of early stages of the disease due to lack of knowledge about the disease among population and stigmata attached to it.

In this Study though all the patients diagnosed With syphilis were treated with Inj. Benzathine penicillin at the point of diagnosis due to loss of follow up of significant number of cases it was difficult to derive conclusions regarding the efficacy of benzathine penicillin from our study. But still it has been the only time tested treatment for syphilis since many decades. This gap in follow up loss can be made up by providing better counselling to the patient at the point of diagnosis and emphasising the needs and benefits of follow up to the patient thereby encouraging him to regularly visit the health care centre.

Partner screening in our study accounted to only 31.8% which was also very less among MSM due to multiple partner contact.

## CONCLUSION:

The clinical trend of syphilis has shown a constant change with late latent syphilis being more prevalent in the recent times and also the rising incidence among MSM due to unsafe sex practices has contributed to the recent upsurge in the incidence of syphilis. The co infection with HIV is also significant among MSM which warrants counselling regarding protective measures against STIs among them. Early diagnosis, treatment at the point of diagnosis and follow up along with partner screening may aid in bringing down the burden of syphilis in India.

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