

Seropositivity of Syphilis among Patients Visiting Gynaecology, STI and Dermatology Clinics

Dhiraj Kumar Chaudhary^{1*}, Shah Pradeep Kumar² and Khanal Hemanta³

¹Department of Microbiology, St. Xavier's College, Tribhuvan University, Nepal

²Department of Microbiology, Trichandra Multiple Campus, Nepal

³Department of Microbiology, Sunsari Technical College, Dharan, Sunsari, Nepal

*Corresponding Author: Mr. Dhiraj Kumar Chaudhary, Department of Microbiology, St. Xavier's College, Tribhuvan University, Nepal.

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Abstract

Syphilis is a sexually transmitted disease caused by *T. pallidum* subspecies Pallidum. The disease is divided into primary, secondary, and tertiary stages. Latent syphilis is the stage in which the infection performs a disappearing act of sorts. The study is aimed to know asymptomatic seroprevalence of syphilis from the blood samples of patients visiting gynaecology, STI and dermatology clinics. This Cross-sectional study was carried out in pathological lab of Sulav Hospital, Belbari, Morang, Nepal between May 2012-October 2012. A total of 2139 blood samples were enrolled. Sera were screened by rapid plasma reagin (RPR) test kit. RPR reactive samples only were further tested by *T. pallidum* haemagglutination (TPHA) test kit. Overall syphilis seropositivity was 0.51%. The highest seropositivity of 0.74% (P-value 0.776) was found in age group 31-35 years with female predominant. Married and previous pregnant population had the highest seroprevalent of 1.21 (p-value 0.001) and 0.90% (p-value 0.266) respectively. mongolian, ethnic group, secondary level literate population, abroad job seekers and returners population and patient with STIs history had the highest seroprevalent of 0.76% (p-value 0.52), 0.57% (p-value 0.977), 0.86% (p-value 0.728%) and 5.2% (p-value 0.001), respectively. Study of seroprevalence of syphilis in asymptomatic cases is very important which help in the control of its consequences and prevent the further progression of syphilis.

Keywords: Asymptomatic; Latent stage; Rapid plasma reagin; Screening; Syphilis

Introduction

Syphilis, a disease which is transmitted sexually occurs globally. The causative agent of this disease is a spirochaete, *Treponema pallidum* [1]. This disease is divided into stages: incubating, primary, secondary, early latent, latent, and tertiary. Among these stages, no any symptoms appear clinically in latent phase. The symptoms may lay dormant for extended periods. Because of symptomless, the latent syphilis remains beyond of treatment. Ultimately, the disease progresses to fatal state, known as tertiary phase. [2]. For screening all stages of syphilis, serological methods such as non-treponemal and treponemal tests are available [3]. According to WHO estimation every year 12 million people are infected with syphilis globally among which 2 million are pregnant women [4]. A study conducted at Centre for Disease Control and Prevention (CDC), United State, the prevalence of syphilis seroreactivity among 18 to 49 year olds was found to be 0.71% [5]. Research performed in New Delhi, India, showed 6.91% (28 / 405) prevalence of syphilis among which male and female comprises 10.11% and 4.40%, respectively [6]. In Nepal, a study made in Kathmandu and Pokhara showed the prevalence of syphilis to be 2.2% and 0.9%, respectively [7]. The present study was aimed to screen the blood sample of patients attending gynecology, STI (Sexually transmitted infection) and dermatology clinic as the asymptomatic cases acting as a reservoir and spread the disease unknowingly.

Methods

This was hospital based cross-sectional study which were designed to study the seroprevalence of syphilis in blood samples of patients attending gynaecology, dermatology and sexually transmitted infection (STI) wards of Sulav Hospital (SH), located in Belbari, Morang, Nepal. During May to October 2012, a total of 2139 blood samples of patients with age group 16-50 years were processed according to microbiological technique as recommended by WHO. For detection of reaginic antibody, blood serum was utilized in rapid plasma regain (RPR) test. RPR test is a non-treponemal diagnosis method and detects presence of cardiolipin antigens. All the reactive sera in RPR were subjected for specific treponemal test. Specific treponemal test was performed by conducting *Treponema pallidum* haemagglutination assay (TPHA). TPHA detects specific antibody of *T. pallidum* antigen in blood serum. Commercially available test kits were used to perform RPR and TPHA tests (Span Diagnostic, for RPR kit & Syphichick, Qualpro Diagnostic, for TPHA kit). The standard methodology prescribed by the manufacturer was exactly followed. Verbal informed consent was taken from the participant and permission from the Sulav hospital was taken to conduct the study. All the reactive and non-reactive data obtained were entered in Microsoft Excell 2007. The data were further analyzed stastically using SPSS 16.0 and WINPEPI 1.96 software.

Results

Among 2139 blood sera, 8 (0.37%) were reactive only in RPR test and 3 (0.14%) were reactive in both RPR and TPHA tests, making overall seropositivity rate of 0.51%. Age-wise distribution of syphilis tests in 31-35 and 26-30 years age group showed highest seropositive of 0.74% and 0.57% respectively. No significant difference [0.776 (P-value > 0.05)] were found among age group. In male and female, the seropositivity of syphilis was 0.49% and 0.54%, respectively. There was no significant association of syphilis infection with sex of studied population [0.875 (P-value > 0.05)]. High positive cases of 1.21% were found among married population in comparison to unmarried. With marital status, occurrence of syphilis is significantly associated [0.001 (P < 0.05)]. In relation to pregnancy all the cases of syphilis 0.90% were from population having previous pregnant history (No significant relation between pregnancy and syphilis infection [0.266 (P-value > 0.05)]). Among ethnic group, Mongolian accounts high positive rate of 0.76% without any significant association with ethnicity [0.529 (P < 0.05)]. Among both reactive cases (RPR and TPHA), the syphilis prevalence was 1 (0.17%), 1 (0.20%) and 1 (0.11%) in illiterate, primary and secondary level literate population respectively. Out of 8 RPR only reactive cases highest 4 (0.46%) were from secondary level literate population followed by illiterate population. Syphilis was not found to be significantly associated with literacy [0.977 (P-value > 0.05)]. The high seropositive of 0.86% was found in abroad job seekers and returners population with no any significant association [0.724 (P-value > 0.05)]. With relation to STI history found that, patients with STI history group had high seroprevalent rate of 5.2%. Syphilis prevalence was shown to be significantly associated with STI history population [0.001 (P < 0.05)].

Discussion

This study revealed the seropositivity of syphilis among patients visiting to gynecology, STI and dermatology clinics. The study also assessed the seropositivity pattern with age, sex, marital status, ethnicity, pregnancy, literacy, occupation and STI history pattern. In the study, the overall seroprevalent rate was found to be 0.51%. Out of 2139 serum samples tested, 0.37% was found to be reactive only in RPR test indicating past syphilis infection and 0.14% was found to be positive in both TPHA & RPR tests indicating active/untreated syphilis. This finding was comparable with similar other studies. A study conducted at centre for Disease Control and Prevention (CDC), US, found the seropositivity rate of syphilis to be 0.71% [5]. Likewise, seropositivity rate of this study was also in agreement with the study made among Nepalese blood donors [8]. In this study, the seroprevalent rate among male population is 0.49% and female population is 0.54% which is almost similar to each other. This was comparable with the findings of other study [5,9,10].

The seropositivity rate of male and female obtained in this study was in contrast with previous study in which male were found to be 0.45% and female 0.20% seroprevalent [11,12]. In this study, the high prevalent rate of 0.74% was found in the sexually active age group of 31-35 followed by 26-30 age group population. This was similar to the cross-sectional study conducted at Nepal Red Cross Society, Central Blood Transfusion Services with the findings of other investigators [8,13]. There were high positive cases of 1.21% among married population. This finding may be attributed to their more involvement in the sexual activity in comparison to unmarried population. A com-

parable data of 0.90% seroprevalent rate among previous pregnant female was obtained. This result is similar to the data obtained in the study conducted at antenatal clinic [14,15]. The highest (0.76%) of seropositive cases was found in the Mongolian ethnic group. Among the total population, the Mongolian ethnic group accounts highest number of 657 (30.73%) in this study. The highest seroprevalent rate found among Mongolian ethnic group may be due large population included in Mongolian caste. Also this ethnic group had STI history and also depends on abroad country for their occupation.

There was high prevalent rate of 0.57% among secondary literate group population. This may be due to lack of proper awareness about STIs, unemployment, & having multiple sexual partners [16,17,18]. This study also found the high positive cases among the patients who had STI history. The reason for high positive rate of syphilis among patients with STI history may be due to the longer persistence of antibody in blood sera. In this study, statistically, there were no significant association of syphilis positive cases with age, sex, pregnancy, ethnic group, literacy, and occupation. But with marital status and STI history pattern, there were significant association with syphilis positive cases.

This study revealed some important insights in STIs health status of general population. The population with symptomless syphilis obtained in this study may be in the stages of primary, secondary, or latent. If the syphilitic cases are not screened and treated, one third of them may proceed to the tertiary stage in the long run. This study also tends to find some risk behaviors of males and females, such as outside socialization, multiple sex relationship, abroad stay, low literacy, and any one type of STI history.

Ethnic Group	No. of Patients Attending	No. of Syphilis cases		P- value
		RPR Reactive	RPR + TPHA Reactive	
Brahaman	443	1	-	0.529 P > 0.05
Chettri	429	2	-	
Mongolian	657	3	2	
Tharu	123	-	-	
Dhimal	119	2	-	
Rajbansi	54	-	-	
Newar	38	-	-	
Dalit	67	-	1	
Muslim	19	-	-	
Others	190	-	-	
Total	2139	8	3	

Table 1: Pattern of syphilis seropositivity with relation to ethnic group.

STI Pattern	No. of Patients	No. of Syphilis cases		P-value
		RPR Reactive	RPR + TPHA Positive	
Patients with STI history	153	7	1	0.001 P<0.05
Patients without STI history	1986	1	2	
Total	2139	8	3	

Table 2: Pattern of syphilis seropositivity with relation to STI history.

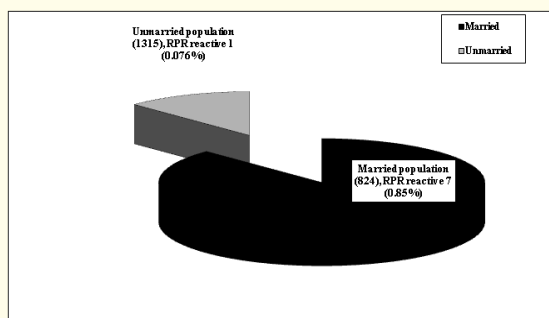


Figure 1: Correlation of RPR test with marital status.

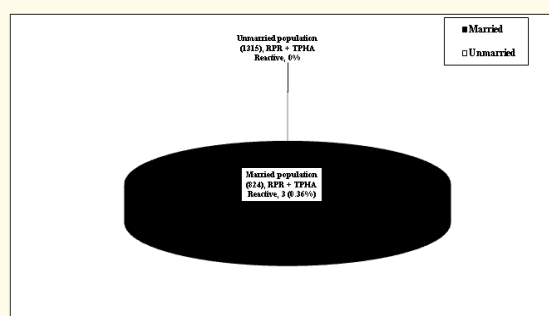


Figure 2: Correlation of RPR + TPHA tests with marital status.

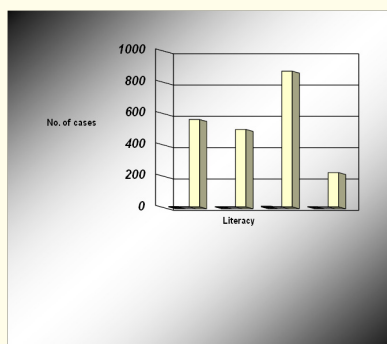


Figure 3: Pattern of syphilis seropositive cases according to literacy.

Conclusion

A serious condition of tertiary stage may develop if cases of asymptomatic syphilis are not screened and treated properly. The individual with lowest socio-economic condition have the highest morbidity rate. A wide spread screening program for syphilis should be implemented to know the exact prevalence of syphilis in rural village of Nepal. STIs awareness program will help in the control of STIs if implemented regularly in the community. Use of condom during sexual relation should be encouraged and homosexual as well as unhygienic practice should be avoided.

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