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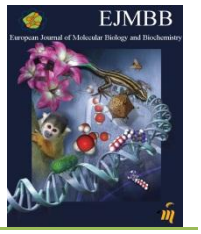

SEROPREVALENCE OF SYPHILIS AND LEPTOSPIROSIS: RISK FACTOR ANALYSIS IN TRIBAL POPULATION

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ABSTRACT

Blood serum samples collected from randomly selected groups of persons inhabiting Tribal community in different parts of TamilNadu such as thiruporur, kudikadu, konnichampattu, katterikupam, saminagar, naganthur, periyamudhaliarchavadi, were identified using the information obtained from Adi dravidar and tribal welfare department of the Government of TamilNadu for the presence of antibodies against syphilis and leptospirosis using IgM –ELISA. The study subject includes 50 males and 82 females. Positive results showed of serum samples collected from tribal community, seroprevalence of syphilis was 6.06% while the seroprevalence of leptospirosis was 56.97%. Higher prevalence of syphilis by TPHA was found in females especially in age groups ranging from 29-50. Co- seroprevalence of syphilis and leptospirosis was found in 4.82% of the subjects. Analysis of risk factors showed that tattooing, drug abuse, alcoholism, polygamy plays a major role in transmission in spread of syphilis. 41.86% of the populations were rat catchers and 37.20% of the populations were associated with other animals which may be responsible for higher seroprevalence of leptospirosis in this population. Further research is needed to eradicate the infections affects the tribal community.

INTRODUCTION

The tribal population in Tamilnadu accounts for about six lakhs. The tribes are illiterate and ignorant about the cause of the disease and have more faith in traditional forms of medicine. Their social customs and practices such as tattooing, hunting, alcoholism, and sexual behavior provide an easy opportunity for the spread and transmission of many infectious diseases. With this back ground if is highly imperative to study the prevalence of syphilis and Leptospirosis in this under developed communities [1,2]. HIV infection has also lead to an increase in STDs especially syphilis among men who have sex with men (MSM). Moreover high rates of syphilis among STI patients also contribute to the spread of HIV-1 in India [3]. Syphilis prevention efforts should target mainly HIV infected individuals and those with history of other STDs [4-6].

Many people infected with syphilis do not have any symptoms for years, yet remain at risk for late complications, if not treated. Hence transmission occurs mainly during primary or secondary stages. Complications of syphilis such as neurosyphilis and congenital syphilis can result in mortality and morbidity in approximately 20%of untreated cases. Syphilis is a reportable infection hence it must reported by health care facilities to public health authorities. This helps in identifying and treating potentially infected sexual partners [7,8].

Syphilis is more common among under developed communities and societies lacking improper health care and insufficient knowledge with reference to spread and prevention of the disease [9]. Syphilis is more prevalent among women over thirty years of age. Syphilis, due to

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genital ulcer it produces remains a co factor for acquiring other STDs, principally those of viral origin such as herpes simplex type 2, hepatitis B [10,11].

Leptospirosis a reemerging zoonosis with global distribution, commonly occurring in tropical and sub-tropical regions. The disease is being increasingly reported in recent times. They continue to cause significant morbidity and mortality. More than 90%of the leptospiral infection remains sub clinical or unnoticed. Leptospirosis is frequently misdiagnosed as a result of its protean and non-specific presentation [12,13]. Additional challenges to this disease are confirmation of the diagnosis which is difficult because of problems associated with isolating the organism and with its serological testing. Leptospirosis a direct zoonotic disease caused by Spirochetes belonging to different pathogenic species of the genus Leptospira. Large number of animals acts as vectors or carriers. Human infection results from accidental contact with carrier animals or environment contaminated with Leptospires [14,15]. The most common presentation involves non-specific signs and symptoms including fever, myalgia, head ache, jaundice in about 39% and sub conjuctival haemorrhage in about 28%. Hence early recognition and initiation of antibiotic therapy is more essential in case of Leptospirosis infection and HIV infection [16].

In TamilNadu, Leptospirosis has been recognized as a major cause of renal failure in Chennai. There have been reports of ophthalmic involvement in the form of panuveitis and retinal et al 1996 [17,18]. About 30% of Pyrexia of unknown origin (PUO) cases was reported in Chennai during the monsoon period was found to be of Letospiral infection.

Leptospirosis was reported quite early in Mumbai. There was a report of suspected case of Leptospirosis in Orissa state in 1945. An Outbreak of febrile illness with hemorrhagic manifestations, particularly pulmonary hemorrhage, following cyclone and flooding was reported in Nov 1997 [19]. Leptospirosis has been reported in Gujarat since 1994.Ther was upsurges during July-Sep [20]. There was a suspected outbreak in Delhi; Outbreak of Leptospires was also reported in North East, Karnataka, Puducherry [21,22].

MATERIALS AND METHODS

Study Population

Tribal communities in different parts of TamilNadu such as thiruporur, kudikadu, konnichampattu, katterikupam, saminagar, naganthur, periyamudhaliarchavadi were identified using the information obtained from Adi dravidar and tribal welfare department of the Government of TamilNadu. The irula tribal communities were persuaded by the tribal leaders to converge at the nearest primary health centers for sample collection. A proforma was formatted (approved by the institute review committee) for this study and consent form was obtained. The aim of the present study is to estimate seroprevalence of syphilis and leptospirosis among irula tribal communities of TamilNadu. To assess the risk factors associated with the disease in the population or community. To determine the co infection among the population.

Collection Transport and Storage of Clinical Specimens

Blood samples were aseptically collected using vacutainers (Becton Dickinsofon, New jersey), serum was separated and the separated serum was transported to the department of microbiology for Dr. ALM PGIBMS, university of Madras, Chennai, TamilNadu in cold chain. The samples were labeled and stored in standard screw capped leak proof vials and frozen at -70°C until processed [12, 13].

Assay Procedure

Bring all the samples and reagents to room temperature & ensure that samples and reagents are fully resuspended before use. Samples do not require any pre-treatment.

Quantitative Screening Procedure

Each test requires four wells of a micro tire plate. Dispense diluents into the micro titre plate.25µl in row 1, 3 and 4 &100µl in row 2.Dispense 25µl of each sample into a well in row 1.Mix well &transfer 25µl from row 1 to row 2.Mix well & transfer 25µl from row 2 to row 3.Mix well & discard 25µl from row 3. Transfer 25µ from row 2 to row 4.Mix well & discard 25µl from row 4. Add 75µl of well mixed control cells to row 3. Add 75µl of well mixed test cells to row 4. Tap the plate gently to mix. The final dilution in row 3 & 4 are 1/80. Cover and let stand at room temperature for 45-60min. Examine for agglutination patterns. Agglutination of the Test cells but not the Control cells indicates the presence of specific antibodies to *T.pallidum*.

Serodiagnosis of Leptospirosis using IgM ELISA

Anti-Leptospira IgM –ELISA (Panbio, Brisbane, QCP) Ref 4073.Australia

Assay Procedure

Bring all reagents to room temperature (20-25^{0}C). Take an ELISA micro titre plate. Sample dilution Add 10microl (White) Negative control, 10microl (Black) Reactive control, 10microl (Orange) Calibrates (triplicate) patient sample with 1000 micro*l* of sample Diluents and mix well. Pipette 100micro*l* of diluted patient sample, controls & calibrate into the respective micro wells. Cover & incubate the plate at 37^{0}C for 30 mins. Wash (6) times with diluted wash buffer. Add 100micro*l* of HRP conjugated Anti-human IgM. Cover & incubate the plate at 37^{0}C for 30 mins. Wash (6) times with diluted wash buffer. Add 100micro*l* TMB chromogen Incubate for 10 mins at room temperature (20-25^{0}C). Add 100micro*l* of stock solution in to all wells, Mix well Yellow color develops. Read the absorbance at a wavelength of 450nm with reference of 600-650 nm.

RESULTS

The study subject includes 50 males and 82 females. The overall positivity by RPR was 17.42 % (23/132) and by TPHA was 6.06 %(8/132). There were 21.21% (28/132) of the subjects were positive either by RPR or TPHA or both. The quantitative tire of positivity ranged from 2 to 64. Out of 23 positive cases 21 were quantitatively positive and 2 were qualitatively positive.

Table 1. Age wise prevalence of leptospirosis in tribal communities table 4 seroprevalence of leptospirosis in tribal communities by IgM ELISA area wise seroprevalence of syphilis

Age	Number of male tested	Number of positive (%)	Number of female tested	Number of positive (%)	Total	Total number of positive (%)
18-28	9	2(22.22%)	21	13(61.90)	30	15(50%)
29-39	5	1 (20%)	12	8(66.66%)	17	9(52.94%)
40-50	11	6(54.54%)	11	9(81.81%)	22	15(68.18%)
Above 50	8	4 (50%)	9	6(66.6%)	17	10(58.82%)

Table 2. Area wise seroprevalence of leptospirosis in Irula tribal community

Area	No. of Sample	No. of Positive	% Positive
Sami nagar	20	17	85%
Nagunthur	5	2	40%
Kudikadu	3	NIL	NIL
Thiruporur	30	14	46.66%
Periyamudaliar chavadi	18	8	44.44%
Katterikupam	10	8	80%
Total	86	49	56.97%

Figure 1. Coinfection of syphilis and leptospirosis in irula tribes

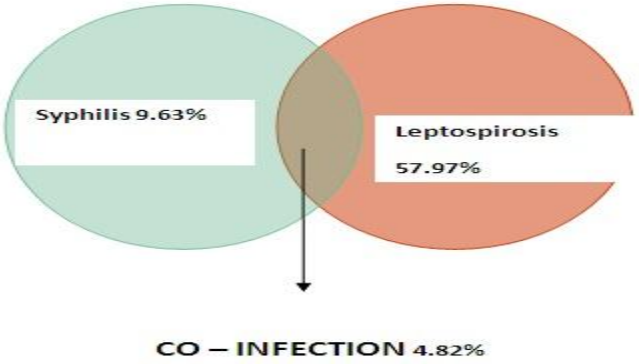
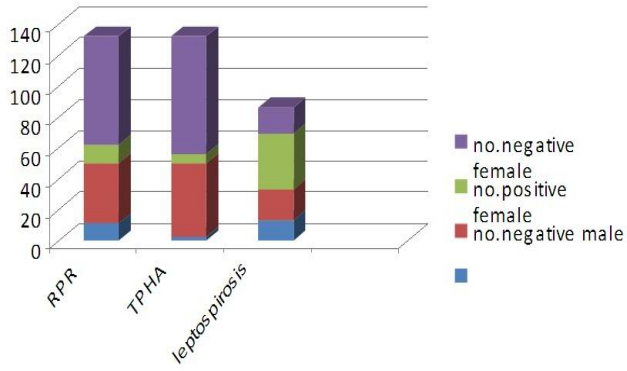


Figure 2. Seroprevalence of syphilis and leptospirosis in tribal communities



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