Letter to The Editor: Syphilis Seroreactivity: Determining the Importance during Routine Screening

Nidhi Singla, Hena Rani, Jagdish Chander

Department of Microbiology, Government Medical College Hospital, Chandigarh, PIN-160030, India

Dear Editor,

There are an estimated 12 million syphilis cases worldwide, and 2 million of these cases are among pregnant women. There is paucity of data from the South–East Asia on the adverse outcomes of untreated syphilis during pregnancy and on the incidence of congenital syphilis among live-born infants. The reasons for this lack of data could be the difficulty of diagnosis, the occurrence of a high number of asymptomatic infections, or the absence of surveillance or reporting systems along with the lack of availability of trained personnel. As a result, the routine screening for syphilis starts at the district level and is not conducted at lower levels (1). According to the US Preventive Services Task Force, screening for syphilis is considered imperative during pregnancy because there is a substantial net benefit of the screening in pregnant women in the form of a reduced incidence of congenital syphilis in neonates (2). Congenital syphilis is preventable if adequate screening for syphilis is performed during pregnancy. Additionally, the prevalence of syphilis is a good indicator of the effectiveness of ongoing prenatal screening and control programmes in the area.

The present study was conducted retrospectively in the Government Medical College Hospital, Chandigarh, over a period of 6 months (January 2008 to June 2008) on 2088 non-duplicate sera received by the Microbiology Laboratory for syphilis screening. Out of the 2088 samples, 1999 were from the Department of Obstetrics and Gynaecology, 11 were from the Sexually Transmitted Diseases Clinic, and 78 were from other departments of the hospital. All sera were subjected to the rapid plasma reagin (RPR) test (using a kit procured from SPAN Diagnostics Limited, Surat, India) for qualitative and quantitative estimation. The sensitivity and specificity of the kit are equivalent to those of the classical Venereal Disease Research Laboratory (VDRL) test, according to the manufacturer. The greatest dilution of the sera at which the RPR test was positive was taken as the titre.

In the present study, 15 (0.72%) samples were found to be seroreactive for syphilis, out of which 14 were from antenatal clinics, and 1 was from the eye outpatient department. The women and their husbands were tested as a part of the normal protocol for the antenatal check-up. Among the included subjects was a woman with history of 2 spontaneous abortions who had a positive RPR with a titre of 8 dils (*Treponema pallidum* haemaglutinin positive). Her husband was also RPR positive (4 dils), and their newborn child was found to be RPR positive with a titre of 2 dils 2 days after birth. Both the husband and the wife had been treated with 3 doses of 2.4 million units of benzathine penicillin during the present pregnancy. Therefore, we assume that the RPR positivity in the newborn could have been the result of the passive transfer of antibodies from the mother (unfortunately, a specific treponemal test could not be performed for the newborn). Clinically, the newborn had no signs or symptoms of the disease. Two other couples were also found to be RPR positive. In one of the couples, both the wife and the husband had a titre of 16 dils; in the other couple, the wife and the husband had titres of 4 dils and 8 dils, respectively. Both of these women had history of abortion in their previous pregnancy. All of these individuals were treated with 3 doses of benzathine penicillin intramuscularly at a dosage of 2.4 million units, and their RPR titres became negative. Both females delivered their babies normally, with normal birth weights and negative RPR titres 2 days after birth. Further follow-up of the babies could not be performed. Three other women had titres of 4 dils, two had 8 dils, and another two had 16 dils. Further follow-up information was not available. It is worth mentioning here that most of the cases were asymptomatic at the time of presentation. It was only the serological diagnosis and their antenatal status that led to the treatment.

The seroprevalence of syphilis in patients visiting antenatal clinics was found to be low in our study. Previously, another study from our geographic area reported similar results (3). The reason for the low prevalence of syphilis could be that the study was conducted in a well-educated city in India. These women receive informative health education and are aware of the benefits of antenatal screening. Further, the control of sexually transmitted diseases (among which syphilis is very important) is one of the main strategies for the prevention of human immunodeficiency virus (HIV) infection. It is recommended that all patients newly diagnosed with HIV infection should be tested for syphilis, and vice versa. As a result, syphilis is

www.mjms.usm.my © Penerbit Universiti Sains Malaysia, 2012
For permission, please email:mjms.usm@gmail.com

better monitored. Overall, in India, the prevalence is reported to vary from 2.5% to 3.4% (3). However, as congenital syphilis can be the outcome of untreated syphilis in pregnant women, screening for syphilis is an imperative cost-effective tool during pregnancy even when the prevalence of RPR positivity is as low as 2% (4).

The patient from the Eye Outpatient Department had a titre of 128 dils. He was a 44-year-old male with a history of recurrent uveitis. A study by Kunkel et al. (5) revealed that ocular syphilis could even be an indicator of previously unknown HIV infection, which emphasises that patients with ocular syphilis must be screened for HIV co-infection. Additionally, Kunkel et al. (5) were able to successfully treat all but 1 of the patients with ocular syphilis .

The VDRL/RPR test has a standard cut-off value for the uniform interpretation of results. A reactive non-treponemal test indicates a present infection or a recently treated or untreated infection. Ideally, patients for whom the non-treponemal test is positive should be evaluated using a specific treponemal test. However, there are studies that indicate that caution is required when interpreting positive treponemal test results (6). Low reactivity in a treponemal test may be a false positive, which may occur in association with a low titre or a negative result for the non-treponemal tests. Low reactivity may also be observed in cases of late syphilis or adequately treated syphilis (the treponemal tests remain reactive, sometimes for life, even after treatment). The results of the study by Rajendran et al. (7) demonstrate that no single serological test for syphilis can act as a marker of ongoing acute infection in an apparently healthy population. All laboratory findings should be interpreted with regard to the medical history of the patient, including the course of infection, previous therapy, and the responses to clinical questioning (8). Recently, a new test, the colloidal gold-immunochromatography assay, has been developed, and this assay helps in identifying relapses of and infection with syphilis. This assay is fast and convenient to use and has very low biological false-positive rate. It is also inexpensive compared with other specific tests for syphilis (9).

In developing countries such as India, people are often lost during follow-up. Most of the time, they do not agree to undergo comparatively expensive specific confirmatory tests, and therefore, the results of non-specific tests are routinely used as a guide to start treatment, especially in community settings. We conclude that congenital syphilis is still prevalent and that effective surveillance during pregnancy can go a long way towards eradicating this potentially preventable disease.

Authors' Contributions

Conception and design: NS
Analysis and interpretation of the data, drafting of the article: HR
Critical revision of the article, administrative, technical, or logistic support: NS, JC
Final approval of the article: JC

Correspondence

Dr Nidhi Singla
MD (Baba Farid University of Health Sciences)
Department of Microbiology
Government Medical College Hospital
Chandigarh, PIN-160030, India
Tel: +91-0172-2665253
Fax: +91-0172-2609360
Email: nidhisingla76@gmail.com

References

1. World Health Organization, Regional Office for South East Asia. *Regional strategy for the elimination of congenital syphilis* [Internet]. India: World Health Organization; 2009 [cited 2011 Jul 19]. Available from: www.searo.who.int/LinkFiles/Publications_RS-elimination-syphilis.pdf.

2. U.S. Preventive Service Task Force. Screening for syphilis infection in pregnant women: Evidence for the U.S. Preventive Services Task Force reaffirmation recommendation statement. *Ann Intern Med*. 2009;**150(10)**:705–709.

3. Sethi S, Sharma K, Dhaliwal LK, Banga SS, Sharma M. Declining trends in syphilis prevalence among antenatal women in northern India: A 10-year analysis from a tertiary healthcare centre. *Sex Transm Inf*. 2007;**83(7)**:592.

4. Terris-Prestholt F, Watson-Jones D, Mugeye K, Kumaranayake L, Ndeki L, Weiss H, et al. Is antenatal syphilis screening still cost effective in sub-Saharan Africa. *Sex Transm Infect*. 2003;**79(5)**:375–381.

5. Kunkel J, Schurmann D, Pleyer U, Ruther K, Kneifel C, Krause L, et al. Ocular syphilis—Indicator of previously unknown HIV-infection. *J Infect*. 2009;**58(1)**:32–36.

6. Hart G. The role of treponemal tests in therapeutic decision making. *Am J Public Health*. 1983;**73(7):**739–743.

7. Rajendran P, Thyagarajan SP, Pramod NP, Joyee AG, Murugavel KG, Balakrishnan P, et al. Serodiagnosis of syphilis in a community: An evaluatory study. *Indian J Med Microbiol*. 2003;**21(3)**:179–183.

8. Lin LR, Fu ZG, Dan B, Jing GJ, Tong ML, Chen DT, et al. Development of a colloidal gold-immunochromatography assay to detect immunoglobulin G antibodies to *Treponema pallidum* with TPN17 and TPN47. *Diagn Microbiol Infect Dis*. 2010;**68(3)**:193–200.

9. Hagedorn HJ. Laboratory diagnosis of syphilis. In: Gross G, Tyring SK, editors. *Sexually transmitted infections and sexually transmitted diseases*. Heidelberg (DE): Springer; 2011. p. 143–149.