

# Screening for Syphilis During Pregnancy in Turkey

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## ABSTRACT

**OBJECTIVE:** To assess the prevalence of syphilis among patients at a tertiary referral center in Turkey and determine the need for antenatal syphilis screening based on the results.

**STUDY DESIGN:** A retrospective cohort study based on patient data obtained from a tertiary referral center in Turkey. Serological syphilis screening using the Venereal Disease Research Laboratory (VDRL) was performed on all pregnant women as a part of routine antenatal care at their first hospital visit during pregnancy. Treponema pallidum hemagglutination assay (TPHA) was used to confirm positive screening results for syphilis.

**RESULTS:** Patients' mean age was 27.4 years. The incidence of positive syphilis serology was 0.013% (one patient), which was supported by a positive confirmatory test (0.013%). The TPHA-positive pregnant woman diagnosed with syphilis was treated with benzathine penicillin, and she gave birth to normal infants without any signs of congenital syphilis.

**CONCLUSION:** Syphilis prevalence should be determined in each developing country with population-based studies. According to the prevalence of syphilis, each country should determine its own syphilis antenatal screening policies.

**Keywords:** Antenatal care, Screening, Syphilis

*Gynecol Obstet Reprod Med* 2016;22(2):72-74 DOI: 10.21613/GORM.2016.51

## Introduction

Sexually transmitted diseases (STDs) have long been important public health problems in developing and developed countries. Syphilis is a sexually transmitted infection caused by the spirochete bacterium *Treponema pallidum* that can affect a fetus during pregnancy. According to a World Health Organization (WHO) report, about 1.86 million active syphilis cases are detected in pregnant women annually, mostly in developing countries (1). Without treatment, congenital syphilis, stillbirth, prematurity, and intrauterine death occur in half of pregnancies involving active syphilis (2). *Treponema pallidum* can cross through the placenta and infect the fetus from the sixth gestational week, and transmission risk increases with time. *Treponema pallidum* can be transmitted during delivery. Intrauterine period manifestations can be seen after the first trimester because fetal immune system maturation develops after 16 weeks.

Congenital syphilis can cause multiorgan involvement, which can have serious consequences, and it can be prevented by appropriate treatment. Therefore, the Centers for Disease

Control and Prevention (CDC) recommends serologic syphilis screening during early pregnancy and third trimester screening in populations where the prevalence of syphilis is high or patients are at high risk (4).

*Treponema pallidum* is a spiral-shaped, Gram-negative, highly mobile bacterium that can be detected using dark field microscopy (5). It can be diagnosed by using dark field microscopy to inspect specimens from the serous discharge of the lesion (6). However, blood tests are now more commonly used. Blood tests can be divided into nontreponemal and treponemal tests. Nontreponemal tests, which are generally used initially, include the Venereal Disease Research Laboratory (VDRL) test and the rapid plasma reagin test. However, these tests occasionally yield false positives and require confirmation with a treponemal test, such as the *Treponema pallidum* hemagglutination assay (TPHA) or the fluorescent treponemal antibody absorption test (FTA-Abs) (7).

In this study, we assessed the prevalence of syphilis among patients at our tertiary referral center and determined the need for antenatal syphilis screening based on the results.

## Material and Method

This was a retrospective cohort study based on patient data obtained from the outpatient clinic of the Başkent University Training and Research Hospital in Konya, Turkey. Serological syphilis screening was performed on all pregnant women as a part of routine antenatal care at their first hospital visit during pregnancy. Serological screening was performed using the

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Submitted for Publication: 17. 03. 2016

Accepted for Publication: 26. 04. 2016

VDRL. TPHA was used to confirm positive screening results for syphilis.

The data are presented as numbers with percentages for categorical variables. The Statistical Package for the Social Sciences (SPSS) version 21.0 was used for statistical calculations.

## Results

The mean age of the study population was 27.4 years. The incidence of positive syphilis serology was 0.013% (one patient), which was supported by one confirmatory test (0.013%). The TPHA-positive pregnant woman diagnosed with syphilis was treated with benzathine penicillin, and she gave birth to normal infants without any signs of congenital syphilis (Table 1).

Table 1: Seropositivity rates of syphilis by year

	N	VDRL+	%	TPHA+	%
2003	601	-	-	-	-
2004	791	-	-	-	-
2005	754	1	0.13	1	0.13
2006	496	-	-	-	-
2007	685	-	-	-	-
2008	613	-	-	-	-
2009	650	-	-	-	-
2010	612	-	-	-	-
2011	408	-	-	-	-
2012	411	-	-	-	-
2013	582	-	-	-	-
2014	681	-	-	-	-
2015	272	-	-	-	-
Total	7556	1	0.013	1	0.013

VDRL: Venereal disease research laboratory, TPHA: Treponema pallidum hemagglutination assay

## Conclusions

Syphilis is a common infection in developing countries and in poor regions of developed countries. Its incidence has started to increase during the last 30 years, and in the early 2000s, it again became a serious health problem (1). We assessed the incidence of syphilis among pregnant women referred to our tertiary referral center in Konya, the 12<sup>th</sup> largest city in Turkey. During the last 12 years, the incidence of syphilis incidence was 0.013%. Only one pregnant woman was diagnosed with syphilis; she was given early treatment, and congenital syphilis was successfully prevented. No population-based study has been conducted in Turkey, so the overall incidence of syphilis is not well known. Akturk et al. reported the incidence of syphilis in Turkey as 0.00495% based on data from the Turkish Health Ministry (8). Oner et al. found a 0% incidence of syphilis among 1129 female blood donors in the Mediterranean region of Turkey (9). Three previous

studies have investigated the prevalence of syphilis among pregnant women in Turkey: Ensari et al. reported the prevalence of syphilis as 0.0079% among pregnant women admitted over a period of 8 years at the largest women's health hospital in Ankara, Turkey (10); and Demirel et al. reported that the prevalence was 0.1% in the eastern part of Turkey (11). According to the World Health Organization (WHO), the mean prevalence of syphilis worldwide in 2008 was 0.06%: in Asian countries, 0.62%; in European countries, 0.16%; in Pacific countries, 0.33%; in US 0.84%; and in African countries, 2.13% (1). Overall, the prevalence of syphilis in Turkey is lower than the world average.

Our study was the first to focus on the prevalence of syphilis in Konya, which is situated in the middle of Turkey and includes a population that is socially, culturally, and economically Central Anatolian. Few studies have explored the prevalence of syphilis among pregnant women in Turkey because Turkey has no antenatal syphilis screening policy. Although some centers have their own antenatal syphilis screening policies, most do not screen for syphilis in routine antenatal screening programs. Our hospital uses the VDRL test to screen for syphilis in pregnant women.

It is important to discuss antenatal screening for syphilis in Turkey because our prevalence appears to be lower than the world average. The prevalence of syphilis in Turkey should be assessed using population-based studies. Based on previous research and our data, we suggest that syphilis antenatal screening should be performed only among high-risk populations in Turkey.

WHO reported that in 2008, syphilis affected 1.8 million pregnant women worldwide, and that the majority of these women had no access to appropriate medical treatment (12). Untreated syphilis during pregnancy can result in fetal loss, stillbirth, infant death, prematurity, low birth weight, and congenital syphilis (1). These unwanted results could be prevented by treatment with penicillin after a positive diagnosis of syphilis (13,14). In our study, only 1 of 7556 pregnant women tested positive for syphilis using the VDRL; this diagnosis was confirmed by a positive TPHA test result. WHO reported that 68% of pregnant women who are infected with syphilis are in populations with low and median income (12). The WHO report did not include any data from Turkey, likely due to Turkey's lack of antenatal syphilis screening policy. Additionally, developing countries like Turkey tend to have insufficient laboratory resources for screening tests.

Because Turkey appears to have a lower incidence of syphilis than the world average, and because Turkey lacks sufficient laboratory resources to screen all pregnancies, it would be most cost-effective to screen only high-risk populations for syphilis. Qualified health personal (midwives, nurses, family doctors, and obstetricians) are needed to detect high-risk populations in antenatal care. Risk factors for syphilis include

HIV (+) pregnancies, multiple sexual partners, and history of unprotected sexual intercourse (18,19).

Congenital syphilis and unwanted perinatal outcomes can be prevented by antenatal screening for syphilis, followed by treatment of affected pregnant women. The US Preventive Services Task Force (USPSTF) suggests a wide antenatal syphilis screening program (20), but WHO suggests screening for syphilis twice during pregnancy: once during the first medical examination and again during the third trimester (21). Because women with the least access to adequate antenatal screening programs and those with multiple sex partners, drug addiction, and HIV (+) are most at risk for syphilis, more healthcare workers are needed to screen for syphilis in these populations. Healthcare workers can effectively reduce the rate of congenital syphilis in developing countries by identifying high-risk pregnant women and referring them to syphilis screening programs. The prevalence of syphilis in each developing country should be assessed using population-based studies; based on the results, each country should determine its own syphilis antenatal screening policy.

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