

Antenatal screening for syphilis at a tertiary care hospital in Riyadh

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Background: Routine serologic screening for syphilis is recommended for all pregnant women in Saudi Arabia. This study examined the results of routine antenatal syphilis screening at a tertiary care hospital in Riyadh.

Patients and Methods: The results of rapid plasma reagin (RPR) tests were compiled for in 3270 pregnant women tested between October 2002 and March 2003 at King Khalid University Hospital. Any RPR reactivity observed in neat or diluted serum was considered positive and confirmed by a *Treponema pallidum* hemagglutination (TPHA) test.

Results: Syphilis screening constituted 87% of RPR tests requested for all reasons during the study period. The majority of women (73%) were screened between 15 to 22 weeks of gestation. Of the 3270 women tested only one was found to have syphilis, a prevalence rate of 0.03%.

Conclusion: The prevalence of syphilis is extremely low in the antenatal care population at King Khalid University Hospital in Riyadh. This calls for a nation-wide survey to assess the need for continuation of antenatal syphilis screening with regards to its potential benefits and cost effectiveness in the Kingdom of Saudi Arabia.

Key words: Syphilis, antenatal screening, rapid plasma reagin, Saudi Arabia

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The prevalence of syphilis in pregnant women attending antenatal clinics varies in different parts of the world. In major African cities it ranges from 4 to 15%.^{1,2} A marked variation in the prevalence of syphilis in pregnant women has also been observed in other parts of the world, ranging from 1.3% in Honduras and 0.6% in Korea to 6.3% in Paraguay and 14.2% in Fiji.³ Although true estimates of the effect on pregnancy outcome are unknown for persons with untreated early maternal syphilis, it is postulated that 5% to 8% of all pregnancies surviving past 12 weeks will end in spontaneous abortion, perinatal or infant death, or a live infant with congenital syphilis.² Untreated maternal infection is also associated with prematurity and low birth weight.⁴ Risk of transmission diminishes as maternal syphilis advances, but in early latent (asymptomatic) syphilis the risk of vertical transmission remains about 30% to 60%.⁵ Maternal infection is, however, detectable by serological screening and entirely treatable with penicillin, which also prevents vertical transmission.⁶

Though not highly specific, the most commonly used serological screening tests for diagnosis of syphilis are the Venereal Disease Research Laboratory (VDRL) and rapid plasma reagin (RPR) tests, which are nontreponemal tests that detect antibodies to lipoidal antigens. Microhemagglutination assay for antibodies to *Treponema*

pallidum and the fluorescent treponemal antibody-absorption test using specific treponemal antigens are considered highly specific, but are too cumbersome to be used as routine screening tests for the diagnosis of syphilis.⁷ The VDRL test is known for its false positive reactions,^{8,9} but in the presence of clinical signs and symptoms is highly suggestive of treponemal infection that can be confirmed by more specific tests. The non-treponemal tests (VDRL and RPR tests) show no difference in specificity and sensitivity in their ability to detect treponemal infection.¹⁰ Using the RPR test reactivity this study addresses the issue of syphilis screening in pregnant women in a tertiary care hospital in Riyadh.

Patients and Methods

Antenatal screening for syphilis is routinely requested for all pregnant women attending the antenatal clinic in the gynecology and obstetric department at King Khalid University Hospital in Riyadh. RPR test results for the period from October 2002 to March 2003 of pregnant women in the division of immunology were retrospectively compiled. During this 6-month interval, sera from 3270 pregnant women (mean age 29±11 years) attending the antenatal clinic were screened for syphilis. The protocol was that any RPR reactivity observed in neat or diluted serum was considered a positive test and later confirmed by the *Treponema pallidum* hemagglutination (TPHA) test.

Table 1. Rapid plasma reagin test screening of pregnant women (n=3270).

Weeks of gestation when tested	No. (% of total)	RPR test positive No. (%)	RPR test negative No (%)
10-14	621 (19%)	–	621 (19%)
15-18	1275 (39%)	1 (0.03)	1274 (39%)
19-22	1112 (34%)	–	1112 (34%)
23-26	197 (6%)	–	197 (6%)
27-30	65 (2%)	–	65 (2%)

RPR reactivity observed in neat or diluted serum was considered a positive test and confirmed by the *Treponema pallidum* hemagglutination test (TPHA).

Results

A total of 3755 RPR tests were performed during the study interval for various reasons and of these 3270 RPR tests (87%) were for syphilis screening of pregnant women. Table 1 shows that all the pregnant women screened for syphilis presented between 10 to 30 weeks of gestation, where the majority were found to have had been screened between 15 to 22 weeks. Of 3270 pregnant women screened over a period of six months only one (0.03%) was found to have a reactive RPR test.

Discussion

Syphilis screening of 3270 pregnant women for a period of six months detected only one patient (0.03%) with syphilis. A survey of 6684 individuals for prevalence of syphilis in 1986 in the Kingdom of Saudi Arabia reported an overall 2.7% reactivity where a significant proportion of pregnant women (0.85%) were found positive for syphilis serology.¹¹ Compared with the results of other surveys for syphilis screening among pregnant women conducted in Ethiopia (13.7% and 10.7%), South Africa (15%) and Mozambique (18.3%),¹²⁻¹⁵ it appears that the prevalence of syphilis among pregnant women in Saudi Arabia is extremely low. Thus, the need for continued antenatal screening for syphilis in Saudi Arabia is questionable. This study reports antenatal syphilis screening in one tertiary care hospital and by no means is an extensive survey on which firm conclusions can be drawn, but it does indicate that syphilis does not appear to be a major threat in antenatal care in the Riyadh region.

No single factor can explain the regional variation in prevalence rates for syphilis observed around the world. Several preventive and therapeutic strategies have been adopted to check the high prevalence rates for syphilis in different parts of the world; the practice of the religion of Islam may have an important bearing. Sexual promiscuity common in the so-called liberal societies of the West, which is forbidden in Islam, has a clear association with higher prevalence rates for syphilis.^{16,17} Similarly, male circumcision as practiced in Islam has been shown to reduce the prevalence of syphilis.¹⁸ The foundations of Saudi society are laid on the teachings of Islam and it is not surprising

to witness low prevalence rates¹¹ for syphilis in a practicing Muslim society, which are the result of simply adopting the Islamic way of life.

In the areas where syphilis reactivity is high among pregnant women, timely detection and treatment of infected cases may help avert the adverse obstetric outcome. This was evident in a study from Mozambique where detection and treatment of women with syphilis during pregnancy resulted in a significant reduction in perinatal mortality.¹⁹ A separate study examining the effect of maternal syphilis on the outcome of pregnancy also confirms that low birth weight and stillbirths can be significantly reduced if mothers are effectively treated during pregnancy.²⁰ These data indicate that in areas where prevalence of syphilis is high, antenatal screening has an important role. However, in view of the observations made in the present study, issues like the effectiveness of antenatal screening, its potential benefits and cost effectiveness, become debatable, especially when 87% of all the requests for syphilis serology are related to antenatal screening.

On the basis of existing evidence it would be premature to suggest that screening for syphilis in pregnant women is superfluous. A long-term comprehensive evaluation is required to assess the utility and cost effectiveness of antenatal syphilis screening in the Kingdom of Saudi Arabia. This has been a subject of debate for many years in the West since highs and lows in the prevalence rates of syphilis have been frequently observed. The number of cases of adult syphilis and childhood congenital syphilis seen at genitourinary medicine clinics in the United Kingdom diminished after 1980,²¹ eventually resulting in calls for abandoning antenatal screening.²² On the other hand, high prevalence rates of infectious syphilis in the developing countries, and the re-emergence of congenital syphilis in the United States in the 1980s, and more recently in the newly independent states of the former Soviet Union,⁵ justify the need to continue syphilis screening of pregnant women. With regards to the low prevalence rates of syphilis in a community and its impact on the outcome of pregnancy, syphilis screening of pregnant women has been questioned in terms of its cost effectiveness.²³ This certainly appears to be the case in the context of the results

obtained in the present study. The findings of this study may not truly represent the actual prevalence of syphilis among pregnant women in the Kingdom, since the population of pregnant women assessed in this study came from an urban area equipped with better health care facilities and

awareness of the disease. However, the prevalence rate of syphilis among pregnant women observed in the present study does serve as a call for a nation-wide survey to assess the need for continued antenatal syphilis screening in the Kingdom of Saudi Arabia.

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