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IS ROUTINE ANTENATAL SCREENINGTEST FOR SYPHYLIS USING VDRL STILL RELEVANT?

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ABSTRACT

Antenatal clinics perform routine serological tests for syphilis as a screening procedure. Syphilis is still a serious but treatable disease with maternal and fetal complications. There are two categories of serological tests for syphilis, the cardiolopin; venereal disease research laboratory (VDRL) test and the specific tests treponema Pallidum haemagglutination (TPHA) test. Pregnancy is a recognised cause of false-positive VDRL test result. The aim of the study was to determine the seroprevalence and cost-effectiveness of antenatal syphilis screening at Aminu Kano Teaching Hospital (AKTH), Kano, Nigeria. The method includes a retrospective analysis of venereal disease research laboratory (VDRL) test results among pregnant women in AKTH during a 4 year period (January 2007-December 2010) was undertaken. The resulst include: a) fourteen –thousand, eight hundred and seventy-one pregnant women were screened for syphilis, using VDRL test; 95women were positive. Only eighty- two (82) folders were retrieved and analyzed given a seroprevalence rate of 0.55%.The peak age specific incidence was in the 20-24 years age group, b) the median gestational age at booking was 22 weeks, c) the cost of VDRL test per patient in AKTH is $2.5. To detect the 95 seropositive cases the sum of $38,106 was spent. It was concluded that the seroprevalence rate of syphilis in this study was low (0.55%). Initial screening using VDRL alone is neither justified nor cost effective. Selective screening base on risk factors and confirmatory test with FTA-AB is recommended.

Keywords: Seroprevalence, VDRL, Pregnancy

INTRODUCTION

Maternal syphilis is an important cause of adverse pregnancy outcome.[1] Syphilis can seriously complicate pregnancy and result in spontaneous abortion, stillbirth, non-immune hydrops, intrauterine growth restriction (IUGR) and perinatal death, as well as serious sequel in live born infected children. Congenital syphilis infection result in fetal or perinatal death in 40% of affected pregnancies, as well as disease complications in surviving newborns, including central nervous system(CNS) abnormalities; deafness, multiple skin, bone, and joint deformities; and haematological disorders[1].

The world health organisation (WHO) recommend serological test for syphilis in pregnancy and treatment with injectable penicillin, including the partner as a routine part of antenatal care[2]. Ideally this screening should be done in the first trimester or at first antenatal visit of the woman and again early in the 3rd trimester. Syphilis screening and treatment in the antenatal care is an effective way to reduce fetal or infant mortality and morbidity in the developing world. The treatment of syphilitic infected mothers represents an opportunity to also treat their partners and thus interrupt further transmission of the disease.

The practice of universal antenatal screening for syphilis has been advised. The cost effectiveness has also been question because of its low yield[3].

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Syphilis is caused by the spirochaete Trepanema Pallidum. The organism is transmitted through sexual activity from muco-cutaneous lesion. The cervical changes such as hyperaemia, eversion and friability, which occurs during pregnancy may facilitate the entry and lead to spirochaetaemia[4]. The mother can transmit the infection transplacentally to the fetus or during passage through the birth canal by contact of the new born with a genital lesion[4].

The Venereal Disease Research Laboratory (VDRL) test is a slide flocculation test employed in the diagnosis of syphilis and is the most widely used. The antigen used in this test is cardiolipin, which is a lipoidal extracted from beef heart, while the specific test is the Treponema pallidum haemagglutination (TPHA) test, both are available for large scale use. Any reactive VDRL test must be cross-checked with a specific treponemal test and confirmed by, FTA-ABS test. Cardiolipin VDRL tests are not truly specific for syphilis. Antibody concentrations may be high in a large number of unrelated diseases, pregnancy and as a normal variant in some healthy people. Their value lies in their low cost and in the ease with which they are titrated. The TPHA is more sensitive than the VDRL in all but the primary syphilis and it is the most sensitive test of all for latent disease.

OBJECTIVE

To determine the seroprevalence and cost effectiveness of antenatal screening for syphilis using VDRL in AKTH, Kano, Nigeria.

MATERIALS AND METHODS

This is a four year retrospective analysis of VDRL results of pregnant women that attended the antenatal clinic of AKTH from January 2007 to December 2010. Booking registers and VDRL registers were obtained from the medical records department and the hospital laboratory. The total annual antenatal bookings were also obtained. All antenatal attendees who had VDRL serology test for syphilis were analysed.

LABORATORY DIAGNOSIS OF SYPHILIS

Five millilitres of venous blood were collected from each patient into sterile tubes and sent to the laboratory for analysis. The sera were analysed and the VDRL flocculation test was performed using the carbon antigen

The age of the patients and their parity, including gestational age at booking, and result of the serology tests were recorded and analyzed using EPI INFO 3.55 version. The results were presented in tabular forms.

Table I. Antenatal yearly distribution of VDRL positive serology test

Year	Number screened	VDRL positive
2007	3134	10
2008	3945	54
2009	3763	4
2010	4029	27
TOTAL	14,871	95

Table II Age distribution of patients with positive VDRL test

Age group	Positive VDRL	Age specific incidence
15-19	3	3.7
20-24	30	36.6
25-29	23	28.0
30-34	15	18.3
35-39	6	7.3
>= 40	5	6.1
TOTAL	82	100

RESULTS

During the study period, 14,871 antenatal clinic patients had VDRL screening out of which 95 were positive. 85 folders were screened and analyzed. The prevalence rate in this study was 0.55%. The ages of the patients ranged from 18 to 41 years with a mean age of26.82±6.08 years. Table 2 shows that he peak incidence was recorded in the age group 20-24 years (36.59%) and the lowest incidence was in the age group 15-19 years (6.1%) , the highest incidence was in the combine ages of 20-30years (64.6%). The mean gestational age at booking was 22.87±4.81 weeks. There was no documentation of treatment offered in 50 patients (61%). Thirty-two patients (39%) were treated with intramuscular injection of Benzathine penicillin 2.4 mega units weekly for 3 weeks. There were no specific or confirmatory tests done on any of these patients, and their babies at delivery did not show any features of congenital syphilis.

DISCUSSION

In sub-Saharan Africa, where the traditional "venereal diseases" have not been controlled, the prevalence of seroreactivity among pregnant women attending antenatal clinic varies[6,7,8]. The screening test in Nigeria is usually carried out by the VDRL test[9]. The values of the VDRL test lies in its low cost and ease of titration. Prevalence of syphilis in pregnant women in developing countries ranges from 3-18%[8,9]. The prevalence from our study is 0.55%. This is higher than the prevalence of 0.05% reported in Maiduguri (Northern Nigeria)[9] but significantly less than 10% prevalence reported from Oshogbo (Western Nigeria)[11]. In Enugu (South Eastern Nigeria) screening values of 3.06%, 1.3% and 0.125% have been reported by successive authors[12,13,14].

The low prevalence found in this study may be attributed to early marriage and less risky sexual behaviour in the study group. Interventions to control HIV/AIDS, introduction of Syndromic Management of STI and over the counter use of antibiotics may have also contributed to this low prevalence.

Cross reactivity may occur due to other spirochaete infections like Yaws, Begel, Pinta which are serologically indistinguishable from syphilis, and is a cause of biological false positivity[10] (BFP). Antibody concentration may be high in pregnancy and as a normal variant in some healthy people[17].The physiological reasons for BFP include pregnancy, menstruation, repeated blood loss, vaccination, severe trauma etc; while the reasons for pathological BFP include malaria, infectious mononucleosis, hepatitis, relapsing fever, tropical eosinophilia, lepromatous leprosy, SLE, rheumatoid arthritis etc. Biological false positivity of 0.02 to 0.7% were reported by various studies in Nigeria[9,14]. There were no cases of false positives in our study group, most likely due to the facts that we did not do any additional specific tests like TPHA.

In our study population, confirmatory tests were not done due to non availability of test kits. Obisesan and Ahmed, in their study reported low rates of testing and/ or no confirmatory tests. However, were confirmatory tests are not easily available, treatment should be initiated as delay in treatment is much more deleterious than not getting confirmation of tests[3,16]; that was the reason all the women in this study were treated as soon as the VDRL results were found to be positive.

While the VDRL test is useful in screening infectious syphilis, it may fail to diagnose the primary disease, it is still useful and considered most sensitive in latent syphilis. Prozone phenomenon in secondary syphilis may give false negative result with undiluted serum[3]. These factors are worthy of consideration before accepting the low prevalence in this study and/or discarding the tradition of syphilis testing.

The highest proportion of positive results (36.59%) was recorded in the 20-24 years age and 25-30years, giving highest incidence of 64.6% in these groups. This could be due to larger number of women and higher sexual activity in this group which therefore make them more vulnerable to risk of acquiring infection. This agrees with findings of Mohammed B et al[9] in Maiduguri (Northern Nigeria).

The median gestational age at booking in our centre was 22.5 weeks. This suggests that most women book at a time when the effect of syphilis on the fetus would have occurred and late detection of

syphilis would have little effect on the overall outcome of the pregnancy. Early booking and screening is essential in preventing congenital syphilis. There were no reports of congenital syphilis in the babies of the mothers treated for syphilis in this study.

The estimated cost of VDRL test per patient in AKTH is N410 ($2.5); meaning that about N6, 079,110 ($38,106) was spent to detect the 82 VDRL cases. In our society more than one-third of the population live in extreme poverty and diseases such as anaemia, malaria and malnutrition is still highly prevalent. These are certainly more important reproductive health problems than syphilis.

CONCLUSION

It is difficult to justify the continuing use of VDRL screening test in our centre, due to overall low sensitivity of the test and low prevalence of syphilis (0.6%) in this study. Because syphilis is still serious but treatable disease, screening with VDRL alone, without specific and confirmatory tests is not justified. Selective screening based on risk factors is recommended.

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