Re-screening for syphilis at the time of delivery in areas of high prevalence

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Abstract **Two hundred women who were screened for syphilis at their initial antenatal visit were rescreened at the time of delivery. Umbilical cord blood specimens as well as maternal sera were tested. Twenty-two (11%) women were rapid plasma reagin (RPR)-positive at booking, while a total of 23 (12%) were RPR-positive at the time of delivery, including an additional 5 (3%) who seroconverted. Four women who were RPR-positive at initial testing had become negative by the time of delivery following treatment.**

Of all neonates born to seropositive women, only 1 demonstrated clinical evidence of congenital syphilis. In view of the high seroconversion rate, we recommend screening for syphilis at the initial antenatal visit and rescreening at the time of delivery in areas such as ours.

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Syphilis remains an important cause of perinatal mortality and morbidity in South Africa, in spite of improved standards of antenatal care in recent times. At King Edward VIII Hospital, the prevalence of reactive syphilis serology in pregnancy has not changed over the last decade; Naicker and Moodley[1] and Dietrich *et al.*[2] reported figures of 7,4% and 7,6% respectively in the same population.

In order to decrease the prevalence of syphilis and consequently lower the incidence of congenital syphilis, the Centers for Disease Control[3] recommend frequent screening, viz. in early pregnancy, in the third trimester and again at delivery in areas of high prevalence. This study was therefore undertaken to evaluate the need for retesting at the time of delivery.

Subjects and methods

Institutional ethical permission was obtained and 200 women who had had previous antenatal care were recruited randomly. Following informed consent, maternal venous blood was obtained at the time of delivery for the rapid plasma reagin (RPR) test (Becton Dickinson). All reactive sera were titred and the *Treponema pallidum* haemagglutination (TPHA) test (Fujirebio) was used for confirmation. Umbilical cord blood specimens were also obtained for the fluorescent treponemal antibody absorbent (FTA-ABS) IgG and IgM tests (Murex Diagnostics). All women who tested positive were treated with a standard regimen for latent syphilis and all relevant demographic data were recorded.

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Results

Twenty-two (11%) of the 200 women recruited to the study had reactive syphilis serology at the time of their first antenatal visit (Fig. 1). At delivery 4 of these 22 women had become RPR-negative and 18 remained positive. Of the 178 women who were RPR-negative at the first antenatal visit 5 (3%) had become RPR-positive by the time of delivery. Thus a total of 23 (12%) women were RPR-positive at the time of delivery. The 5 women who seroconverted booked for antenatal care between 22 and 33 weeks' gestation and although all had low RPR titres at delivery, their TPHA tests were positive. Of the cord blood specimens taken, 4 of these 5 demonstrated the presence of IgG antibodies and none IgM antibodies (Table I). Of the 178 umbilical cord blood specimens from neonates of mothers who were RPR-negative at their first antenatal visit, 26 demonstrated the presence of IgG antibodies and none showed the presence of IgM antibodies (Fig. 1). None of these infants had clinical evidence of congenital syphilis.

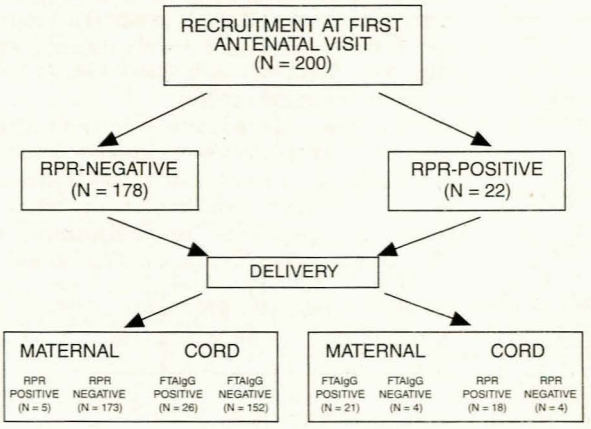

FIG. 1.
Flow diagram of results of screening.

The outcome in the neonates of the 23 mothers who were RPR-positive at delivery was as follows: 12 had no complications, 6 developed mild jaundice requiring phototherapy, 4 had ophthalmia neonatorum, and only 1 neonate had clinical evidence of congenital syphilis, viz. skin, sole lesions and jaundice. IgM antibodies were not demonstrated in the umbilical cord blood and radiographs of the long bones were normal. The mother of this neonate had an RPR titre of 1:32 at the initial visit, received one dose of benzathine penicillin and then defaulted. The baby received a 10-day course of procaine penicillin and was discharged in good health.

Discussion

The prevalence of syphilis in this study was 11% at the time of the first antenatal visit. This is slightly higher than that reported by other authors working with the same population,[1,2] and suggests that syphilis is endemic

TABLE I.
Data on the 5 women who seroconverted

Age	Parity	Gestational age at booking (weeks)	Maternal venous blood: RPR titre at booking	Maternal venous blood: RPR titre at delivery	Cord blood: FTA-ABS IgG	Cord blood: FTA-ABS IgM	Weight of baby (kg)
26	3	26	–	1	+	–	3,2
33	4	33	–	4	+	–	3,0
28	3	31	–	1	–	–	3,3
32	3	22	–	1	+	–	3,6
28	1	26	–	2	+	–	3,1

RPR = rapid plasma reagin test; FTA-ABS = fluorescent treponemal agglutination absorption.

in the local population. This study also demonstrates a seroconversion rate of 3% which is much higher than the figure of 0,3% found at Tygerberg Hospital.[4] This difference may be due to the fact that the population studied at Tygerberg is probably of a higher socio-economic status and therefore not as frequently on the move.

Our findings strongly suggest that multiple testing be performed during pregnancy. The Centers for Disease Control[3] have recommended testing at first visit, in the third trimester and again at delivery in areas of high prevalence. Such frequent testing will result in increased financial costs for developing countries where resources are limited. Consequently we would like to suggest that screening be done at the first antenatal visit and at the time of delivery at King Edward VIII Hospital and similar endemic areas. This will also be very useful for patients who deliver in hospital without having had any previous antenatal care.

There were 26 patients who were RPR-negative at the initial antenatal visit but who demonstrated IgG antibodies in umbilical cord blood at delivery. This suggests past exposure and reflects the background prevalence of syphilis in the community. None of the neonates born to these mothers had clinical evidence of syphilis. In our study, congenital syphilis was diagnosed in only one neonate who demonstrated typical skin and sole lesions. This baby, however, did not have evidence of IgM antibodies or radiological features of congenital syphilis, and illustrates the great difficulties faced by clinicians in diagnosing congenital syphilis. Emphasis must therefore be placed on the recognition of suggestive clinical features, viz. snuffles, palmar and plantar bullae, splenomegaly, pseudoparalysis and cutaneous syphilis. Prevention of congenital syphilis must largely depend on good antenatal care, early detection of syphilis in the mother and the initiation of appropriate and timely therapy. Swingler and Van Coeverden de Groot[5] and Meyer[6] have recently reported the potential benefits of on-site testing in antenatal clinics in order to prevent congenital syphilis. Dorfman *et al.*[7] go further and suggest that besides maternal testing, serological investigations should be performed on infants with fever associated with aseptic meningitis, hepatomegaly, or haematological abnormalities, even if previous maternal tests for syphilis were negative.

In conclusion, this study once again draws attention to the endemic nature of syphilis in the local population and strongly suggests that screening be performed at the first antenatal visit and at delivery. It is only with repetitive testing in pregnancy, treatment of sexual partners and improvement in health education that we can hope to lower the prevalence of syphilis and reduce its effects on perinatal morbidity and mortality.

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REFERENCES

1. Naicker S, Moodley J. Serological diagnosis of syphilis in pregnancy. *S Afr Med J* 1983; **63:** 536-537.
2. Dietrich M, Hoosen AA, Moodley J, Moodley S. Urogenital tract infections in pregnancy at King Edward VIII Hospital, Durban, South Africa. *Genitourin Med* 1992; **68:** 39-41.
3. Centers for Disease Control. Sexually transmitted diseases treatment guidelines. *MMWR* 1989; **38:** 5-15.
4. Rossouw M, Theron G. The antenatal prevalence and seroconversion rate of syphilis in the Tygerberg Hospital area (Abstract). *Twelfth Conference on Priorities in Perinatal Care in South Africa.* Johannesburg: University of Witwatersrand, 1993.
5. Swingler G, Van Coeverden de Groot H. The antenatal prevention of congenital syphilis in a peri-urban settlement. *S Afr Med J* 1993; **83:** 34-35.
6. Meyer MP. Prevention of congenital syphilis (Letter). *S Afr Med J* 1993; **83:** 372.
7. Dorfman DH, Glaser JH. Congenital syphilis presenting in infants after the newborn period. *N Engl J Med* 1990; **323:** 1299-1302.