

RPA Newborn Care Guidelines

Royal Prince Alfred Hospital

Congenital Syphilis

Introduction

Syphilis is a notifiable disease. Maternal syphilis can be divided into primary, secondary, latent and tertiary stages. The risk to the fetus is determined by the stage of maternal infection and her treatment status. The risk to the fetus is highest in untreated primary and secondary syphilis.¹ Untreated latent maternal syphilis in the first 2 years after infection causes fetal or perinatal death in 20% of pregnancies, preterm delivery in 20% and, if pregnancy goes to term, congenital syphilis with resulting handicap in approximately 40%.²

Incidence and Risk Factors

In Australia, notifications of syphilis between 1991 and 1994 varied from 12.2 to 16.0 per 100 000 population with a wide geographical variance. Rates greater than 100 per 100 000 were reported in much of northern Australia. The incidence in Aboriginal people varied from 114 to 913 per 100,000.³ In NSW, 6990 notifications of syphilis were received by the health authority in the last 10 years (1993-2002).⁴

Risk factors for congenital syphilis:

- Lack of adequate antenatal care;³
 - Failure to repeat a serological test for syphilis in the third trimester when it tested negative in the first booking;³
 - Past history of sexually transmitted disease;³
 - Multiple sexual partners;³
 - Substance abuse;³
 - Being in a disadvantaged population group (indigenous people and people marginalised by chemical dependency, poverty and prostitution);³ and
 - Recent migrants and refugees (In developing countries congenital syphilis is still common²).
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Clinical Features^{1, 2}

Babies may be asymptomatic at birth and develop symptoms only later or they may present with clinical disease, the commonest features being:

- hepatosplenomegaly
- erythematous maculopapular rash
- IUGR
- periostitis

- snuffles

Other clinical findings in infants with early congenital syphilis include nonimmune hydrops, jaundice, lymphadenopathy, anaemia and thrombocytopaenia. Late manifestations of untreated syphilis include keratitis, deafness, teeth abnormalities, mental retardation, hydrocephalus and skeletal abnormalities.

Serology

The tests done at RPAH are RPR and TPPA.

1. Screening tests
 - VDRL (Venereal Disease Research Laboratory)
 - RPR (rapid plasma reagin)

Biological false positive VDRL/RPR results can occur with viral infections, immunisations, pregnancy, autoimmune diseases, narcotic addiction and malignancies.^{5,6} RPR titre is generally higher than VDRL and titre cannot be directly compared.¹⁰ The VDRL test is the only one approved for use on CSF.⁶ Interpretation of the serological results must take into account the fact that IgG cross the placenta and titres will fall gradually over months in the absence of neonatal infection. RPR should be performed on the infant's serum as umbilical cord blood can become contaminated with maternal blood and yield a false-positive result.⁷ In cases of probable congenital syphilis, the infants' titres may be lower, the same or higher than the maternal titres.⁸

2. Specific tests
 - TPPA (Treponema pallidum particle agglutination)
 - FTA-ABS (Fluorescent treponemal antibody absorption)

It is not necessary to perform TPPA on the infant's serum if the mother's TPPA is positive.⁷

A number of new tests have been developed for the diagnosis of syphilis:

- FTA-ABS 19S IgM (sensitivity 73%)⁸
- IgM ELISA (sensitivity 88%)⁹
- Immunoblot for IgM⁹
- PCR⁹

A positive serum IgM confirms congenital syphilis but a negative result does not exclude it.

Investigations^{7,10}

The possible investigations in congenital syphilis are:

- Baby's RPR
- FBC
- LFT

- X-Ray long bones
- CSF (for cell count, protein, VDRL, PCR, IgM). (The sensitivities and specificities, respectively, are 53% and 87% for CSF VDRL, 38% and 81% for CSF pleocytosis, 53% and 82% for raised CSF protein, 71% and 99% for CSF PCR)
- Other investigations may include darkfield microscopic examination / direct fluorescent antibody staining of suspicious lesions or body fluids (eg nasal discharge) and examination of the placenta.

The indications for these investigations are found in the summary table.

Notification¹¹

In NSW all cases of congenital syphilis, including syphilitic stillborns, need to be notified. In Central Sydney Area cases are notified to the CSAHS Public Health Unit (tel no. 95153180). For purposes of notification, a case of congenital syphilis is an infant whose mother had untreated or inadequately treated syphilis at delivery (that is non-penicillin therapy, or penicillin administered less than 30 days before delivery), regardless of signs in the infants; or an infant or child who has a reactive VDRL/RPR test and any one of the following:

- Evidence of congenital syphilis on physical examination,
- Evidence of congenital syphilis on long bone x-ray,
- Cerebrospinal fluid reactive on VDRL testing,
- An elevated CSF cell count or protein (without other cause),
- A reactive test for treponemal IgM antibody, or
- Demonstration of T. pallidum by darkfield microscopy, fluorescent antibody, PCR or other specific stains in specimen from placenta, umbilical cord, lesion, CSF or autopsy material.

A syphilitic stillbirth is defined as fetal death that occurs after 20 week gestation or in which the fetus weighs more than 400g and the mother had untreated or inadequately treated syphilis at delivery.

Treatment

The decision to treat an infant for congenital syphilis is based on the clinical presentation, previous maternal serology results and treatment, result of the serologic testing of the mother at delivery and reliability of subsequent infant follow-up.^{1,7,10}

It is important to establish the maternal treatment history. It may be useful to contact her primary health care worker (eg Aboriginal Medical Service, GP) to obtain such history.

Treatment regimen⁷:

IVI aqueous crystalline penicillin G 50,000 units/kg/dose every 12 hours during the first 7 days of life and every 8 hours thereafter for a total of 10 days,

OR

IMI procaine penicillin G 50,000 units/kg/dose in a single daily dose for 10 days

OR

IMI benzathine penicillin G 50,000 units/kg/day in a single dose. (IMI benzathine penicillin G does not treat neurosyphilis)

Summary table. The main resource document for this table is the Centers for Disease Control and Prevention. 2002 Guidelines for sexually transmitted diseases. MMWR 2002; 51(RR06): 1-80

High risk	< ----- >		Low risk
<p>Infants with proven or highly probable disease</p> <p>a. an abnormal physical examination that is consistent with congenital syphilis;</p> <p>b. a RPR titre \geq fourfold the maternal titre; or</p> <p>c. a positive darkfield or fluorescent antibody test of body fluid(s).</p>	<p>Infants who have a normal physical examination and a RPR titre \leq fourfold the maternal titre and the</p> <p>a. mother was not treated, inadequately treated, or has no documentation of having received treatment;</p> <p>b. mother was treated with erythromycin or other non-penicillin regimen;</p> <p>c. mother received treatment <4 weeks before delivery; or</p> <p>d. mother has early syphilis and has a RPR titre that has either not decreased fourfold or has increased fourfold.</p>	<p>Infants who have a normal physical examination and a RPR titre \leq the maternal titre and the</p> <p>a. mother was treated during pregnancy, treatment was appropriate for the stage of infection, and treatment was administered >4 weeks before delivery;</p> <p>b. mother's RPR titre has decreased fourfold after appropriate therapy for early syphilis or remained stable and low for late syphilis; and</p> <p>c. mother has no evidence of reinfection or relapse.</p>	<p>Infants who have a normal physical examination and a RPR titre \leq fourfold the maternal titre and the</p> <p>a. mother's treatment was adequate before pregnancy and</p> <p>b. mother's RPR titre has remained low ($<1:4$) and stable before and during pregnancy and at delivery</p>
<p>RPR FBC LFT LP X-rays cranial ultrasound ophthalmologic examination, auditory brainstem response</p>	<p>RPR FBC LFT LP X-rays</p>	<p>RPR</p>	<p>RPR</p>
<p>10 days penicillin</p>	<p>10 days penicillin</p>	<p>Benzathine penicillin x 1</p>	<p>No treatment is required</p>
<p>Follow-up 3/12, 6/12 and 1 year with RPR.</p>	<p>Follow-up 3/12, 6/12 and 1 year with RPR.</p>	<p>Follow-up 3/12, 6/12 and 1 year with RPR.</p>	<p>Review serology in 2 weeks</p>

Neurosyphilis: repeat CSF examination at 6/12	Neurosyphilis: repeat CSF examination at 6/12		
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Follow Up

The aim of follow up is to document, by falling titres, the complete treatment of congenital syphilis. Re-treat if serology is persistently reactive or the CSF or physical examination is abnormal.

A large number of these babies are not brought back for appointments. It is extremely useful to involve ancillary medical services such as the Aboriginal Medical Service (AMS) in Redfern (tel. no. 93195823).

Note: Syphilis carries a great deal of stigma, especially in the Aboriginal community, so tact and sensitivity are needed.

References

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