



## RESEARCH ARTICLE

### CONGENITAL SYPHILIS EXPERIENCE AT THE ROYAL HOSPITAL, MUSCAT, OMAN, FIVE CASE SERIES

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#### ABSTRACT

*Treponema pallidum* was discovered in 1905 as a causative organism of syphilis. Although discovered early, syphilis is still a major health problem in many developing countries. There are few studies available on congenital syphilis from gulf countries including Oman. We described a 5 cases of congenital syphilis seen in tertiary care center the Royal Hospital, Muscat, Oman. The aim of this case series is to high light the clinical and laboratory features of the baby who born to mothers with positive VDRL in order to help in directing efforts and plans toward appropriate management and better prevention measures in dealing with children with congenital syphilis or born of mothers with syphilis.

#### INTRODUCTION

*Treponema pallidum*, was discovered in 1905 as a causative organism of syphilis. Although discovered early, syphilis is still a major health problem in many developing countries (WHO, 1998). The prevalence of maternal syphilis in developing countries is about 2millions cases per year (Reyna-Figueroa, 2011), which is higher than in developed countries (Williams, 1985). This result in about 728,547 cases of congenital syphilis, 15% to 38% of which are symptomatic (Reyna-Figueroa, 2011), Congenital syphilis accounts for nearly 1.3%of death among 5 years old children (Herremans, 2010), Syphilis is sexually transmitted disease (STD) (Berman, 2004), that can be vertically transmitted to the fetus from about 14 weeks' gestation, and the risk of fetal infection is proportional to the gestational age (Goldenberg, 2003). Many factors affect CS clinical manifestations including: gestational age, stage of maternal syphilis, maternal treatment and fetal immunological response (Saloojee, 2004). The chance of fetal infection in untreated women is about 70% in the first 4 years of disease (De Santis, 2012). According to world health organization (WHO), maternal syphilis can result in spontaneous abortion and still birth (460,000 cases) or low birth weight and prematurity (270,000 cases) and congenital syphilis (270,000) (De Santis, 2012 and Finelli, 1998). the infection can be asymptomatic at birth in about 60% of newborns (Watson-Jones, 2002). CS is classified into early congenital syphilis (ECS) and late congenital syphilis (LCS). It is called ECS, if

the symptoms and signs appeared within the first 2 years and LCS if the symptoms and signs appeared within the first 2 decades (Ingall, 2001), At ECS, patients may present with hepatomegaly, splenomegaly, jaundice, generalized lymphadenopathy, large epitrochlear nodes, hematological manifestation (anemia, thrombocytopenia, and leukocytosis), mucocutaneous lesions (small copper-red maculopapular lesion and rhinitis), bony involvement (osteochondritis and periostitis), nephrotic syndrome, congenital neurosyphilis, ocular manifestations (chorioretinitis, glaucoma, uveitis, cataract, salt and pepper fundus and chancres of the eyelid). (Ingall, 2001 and Dorfman, 1990). LCS is very rare and occurs in about 40% of untreated children. Patient with LCS may present with ocular manifestation (Interstitial keratitis), dental abnormalities, Syphilis rhinitis which cause nasal septal perforation, Neurological manifestations (mental retardation, hydrocephalus, convulsive disorders, cranial nerve abnormalities (including blindness and deafness), and juvenile general paresis, Bony involvement [prolonged periostitis of the skull (resulting in frontal bossing), of the tibia (resulting in saber shin) and of the sternoclavicular portion of the clavicle (resulting in a deformity called Higoum' enakis sign) (Platou, 1949 and Sánchez, 2004).

According to WHO guidelines, the cost-effective interventions to screen maternal syphilis are non-treponemal tests (NTTs) such as rapid plasma reagin (RPR) and Venereal Disease Research Laboratory (VDRL), which are easier to perform, cheaper, allow treatment to be given immediately if indicated and follow up patients post-treatment compared to treponemal test (Connor, 2000). However, these tests can give false positive and false negative results (US Preventive Services

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Task Force, 1996). In ideal situation, non-treponemal tests should be confirmed by treponemal tests such as treponema pallidum heamagglutination assay (TPHA), but this is not recommended for primary care facilities (Augenbraun, 1998). Therefore, any patient with seropositive RPR should receive treatment (Peeling, 2004). New treponemal-based test for syphilis is available which is simple, effective, quick and accurate but it is costly compared to previous tests (US\$ 0.93-1.44 per woman). (Terries-Prastholt, 2003). As per international guidelines, every women with seropositive test for syphilis should be tested for HIV infection. Ministry of health of Sultanate of Oman recommends that all pregnant ladies should be screened for syphilis in the first trimester by using VDRL. If the test is positive, retest should be done in the third trimester. All women with seroactive results should be treated with benzathine benzylpenicillin with at least 2.4 million unit intramuscularly as a single dose (Musher, 1990). Allergy to penicillin should be excluded before starting the treatment. In case the patient is allergic to penicillin, should be referred to a higher level of care. In addition, the partner should be treated with the same regimen (Centers for Disease Control and Prevention, 2002). Regarding the baby, if she/he is positive should be treated with same regimen as soon as possible (Walker, 2004). There are few studies available on congenital syphilis from gulf countries including Oman (Al-Mutairi, 2007).

hospitals. All cases were exposed to syphilis in utero and were referred regardless of maternal treatment during pregnancy. The Diagnosis and management of these cases were based on maternal history, clinical findings and nontreponemal (VDRL or RPR) and treponemal testing (ELISA and/or TPHA). Complete diagnostic evaluation including lumbar puncture was done in some cases only, but long bone radiographical examination was not done for any one of the cases. There was no specific protocol available on how to investigate these cases; investigations were done according to the availability and physician request. All cases with serological evidence of congenital syphilis were treated with benzyle penicillin for variable durations. Blood titer after treatment was obtained. All cases had both clinical and serological follow-up. Regarding maternal information, information was collected from the electronic medical record of her infant. Data gathered included: demographical data (age and region), gestational age at diagnosis and titer at that time, history of congenital syphilis, treatment received (drug, dose, duration of treatment, gestational age at time, completed course of treatment or not), and titer before and after delivery.

**RESULTS**

Management of the five cases was variable, there was no specific local protocol for diagnosis and management; investigations were done according to the availability and

**Table 1. Treponemal and non-patients the for tests treponemal**

Syphilis test			
Pt.	Nontreponemal tests (VDRL\RPR)	Treponemal tests (ELISA, TPHA)	Titer b/f treatment
1	RPR -	TPHA+, ELISA+	1:320 (TPHA)
2	VDRL+	TPHA+	1: 128 (VDRL)
3	VDRL+	TPHA+, ELISA+	1:4 (VDRL)
4	VDRL+		1:04
5	VDRL+	TPHA+, ELISA+	1:18

**Table 2. Treatment and outcome of patients**

Case	Titer b/f treatment	Treatment			Out come
		Age received	Drug, dose	Titer a/f treatment	
1	1:320 (TPHA)	2 months	benzyl pen. 50,000 iu/kg 6 hr for 10 d	ND	Clinically asymptomatic
2	1: 128 (VDRL)		benzyl pen. 50,000 iu/kg IM 1 dose	1:2 (VDRL), TPHA pos.	Clinically asymptomatic
3	1:4 (VDRL)		ND	ND	Clinically asymptomatic
4	1:04		ND	ND	Clinically asymptomatic
5	1:18	12 days	benzyl pen. 120,000 iu 8hr for 7 days	ND	Clinically asymptomatic Negative CSF

**Table 3. Investigations and treatment of the mothers**

Mother of case	Diagnosis			Treatment		Titer before delivry	Titer after delivery
	Trimester	Titre at DX	Trimester received	Drug	Duration		
1	1ST	1:51209(TPHA)	1ST	BENZYL PEN.	weekly for one month	ND	(1: 12640) (TPHA)
2	3rd trimester	ND	ND	ND	ND	ND	VDRL +
3	2nd	ND	2nd	Benzyl pen.	weeks 3	VDRL +	ND
4	2nd	1:08	2nd	Ceftriaxone	days 9	VDRL+/ TPHA+	ND
5	ND	ND	ND	Pen. Tablets	ND	ND	VDRL +, 1:18

**MATERIALS AND METHODS**

Patient with suspected or confirmed congenital syphilis referred to the Royal Hospital pediatrics infectious disease clinic were reviewed between April 2014 to March 2015. Five patients with ratio of 3 male: 2 female and mean ages of 19.4 days (range 1day-2months) presented to pediatrics infectious disease clinic at Royal Hospital as referred cases from 3 secondary

physician request. VDRL was done for all cases except case1, where RPR was done. Regarding treponemal testing, ELISA was done for all cases except case 2 and 4, where TPHA was done for all cases except case 4. Three out of five cases underwent LP. The titer before treatment was available for all cases. Results of each case are summarized in Table (1). Regarding treatment regimen, it was variable between the

cases. Case 1, received benzyl penicillin 50,000 iu/kg 6 hrs for 10 d at the age of 2 months, there is no record regarding titer after treatment. Case 2, received benzyl penicillin 50,000 iu/kg IM 1 dose, there was reduction in the titer from 1:128 to 1:2 after treatment. There were no records for case 3 and 4. Case 5 received benzyl penicillin 120,000 iu 8hr for 7 days at age of 12 months, the titer after treatment was not recorded, but negative CSF was achieved. All children were asymptomatic at the time of investigations and had unremarkable physical examinations with no signs of congenital syphilis. All babies were asymptomatic and developing normally on subsequent follow. Results of each case are summarized in Table (2). Regarding maternal condition during antenatal period, mother of (m/o) case 1 was diagnosed at first trimester of titer 1: 51209, while m/o of case 3 and 4 had positive VDRL at second trimester with titer of 1:08 for m/o case 4. There were no records for case 5. All cases received benzyl penicillin at time of diagnosis except m/o case 4 which received ceftriaxone. M/o case 2 had positive VDRL at 3<sup>rd</sup> trimester. There were no records for m/o case 5. Comparing titer before and after treatment, m/o case 1 achieved a titer of 1:12640, while m/o case 5 achieved 1:18, but no records for pre-treatment titer. M/o case 1 and 4 had a history of previous pregnancy with syphilis positive. Results of each case are summarized in Table (3).

### Conclusion

Congenital syphilis is still considered an important treatable disease. It's preventable when a pregnant woman, her partner and her child are treated well. This case series demonstrates that, there is no specific local protocol for diagnosis and management of babies born of mothers with syphilis, patients are managed according to tests availability. This emphasize the importance of having a standardized approach for patients with congenital syphilis, which ensures a proper management.

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