

**Original Research Article****Syphilis Sero Surveillance in Pregnant Women and Adverse Fetal Outcome
- A study done at North District Hospital, Goa**

Authors

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Dr Varsha Munj**Abstract**

Purpose: Syphilis can have adverse pregnancy outcome if untreated. The purpose of the study is to evaluate maternal- fetal surveillance and to follow up infants at risk.

Method: Retrospective Cohort study in North District Hospital of Goa between January 2014 to December 2020. The study included all pregnant women diagnosed and delivered in our hospital using screening tests.

Results: A total of 15799 pregnant women were screened, 18 risk pregnancies were found. 17% were detected in the 1st trimester, 44% were detected during 2nd trimester, and 39% were detected at 3rd trimester /at birth. 55.6% cases were seen in the age group of 25-34 years. Adverse pregnancy outcomes were seen in 5 cases.

Conclusion: The study encourages all pregnant women to seek care in 1st and 2nd Trimester of pregnancy to avoid preventable adverse outcomes

Keywords: Antenatal clinic, TPHA , RPR, trimester, congenital syphilis.

Introduction

Syphilis is one of the sexually transmitted diseases caused by bacterium *Treponema Pallidum* which if left untreated can lead to significant complications¹. Active Syphilis infection is reported globally among 1.5 million pregnant women which constituted a major form of health problem despite its relatively simple prevention and treatment. Syphilis in pregnancy is of concern as it has adverse outcomes like early fetal loss, low birth weight infants and infants with Congenital Syphilis which causes significant perinatal morbidity and mortality in low resource

centers². Congenital syphilis is a serious but preventable disease which can be eliminated through effective screening of pregnant women with timely antenatal care intervention and use of proper therapy for prevention of congenital syphilis and complications associated with the disease.³

WHO has recommended screening for Syphilis at the first antenatal visit as early as possible in pregnancy and repeating tests in third trimester if resources permit to detect infection acquired in pregnancy³.

RPR and VDRL tests are cheaper, easy to perform screening tests, which are effective in diagnosing and managing these patients¹. Prevalence of Syphilis is changing in India due to necessary steps taken by Government for prevention of Syphilis but still it remains a public health problem⁴.

Aim of the Study

- 1) To evaluate the maternal surveillance of Syphilis and its clinical approach, treatment and follow up of Infants at risk according to the recent guidelines from the Centre of Diseases Control and Prevention.²
- 2) There is no data published of Syphilis incidence in pregnant women from North Goa hence we have undertaken this study

Materials and Methods

This was a retrospective cohort study conducted at North District Hospital, Goa over a period of 7 years. Routine screening for Syphilis is mandatory during pregnancy under National Health Mission program and NACO. The screening test includes Rapid plasma Reagin test (RPR) and Treponema Pallidum Hemagglutination Assay (TPHA). We retrospectively analysed the statistical laboratory data of RPR tests and TPHA done in the laboratory along with Maternal and infants medical records from January 2014 to December 2020. A total of 15799 pregnant women were screened for Syphilis by screening tests. Syphilis sero prevalence was calculated by dividing the total number of pregnant women seropositive for syphilis to the total number of pregnant women screened. The cases were studied with reference to the age of the patient, gestational stage at the time of infection, severity of fetal infection, adequacy and timing of maternal treatment, immunological response of the foetus.

Inclusion Criteria -All pregnant women who visited antenatal screening in North District Hospital, Mapusa Goa and delivered at our hospital between January 2014 to December 2020

Exclusion Criteria- All non-pregnant cases

Test Methodology

For syphilis testing, all Serum samples were tested by RPR (Rapid Plasma Reagin) card test. Samples tested positive by qualitative method were subjected to Quantitative method using isotonic saline serial dilution of test sample (1:2, 1:4, 1:8, 1:16, 1:32, 1:64, 1:128 and so on). The titre of antilipoidal antibodies is reported positive in highest dilution. RPR positive result was subjected to TPHA TEST (Treponema Pallidum Hemagglutination Assay). The samples positive by both tests were considered positive.

Staging of maternal Syphilis is complex and is based on combination of history, physical examination and epidemiologic features and serological test. The quantitative maternal non-treponemal titre of more than 1:8 might be a marker of early infection and bacteremia. However the risk of fetal infections is still significant with pregnant women with late latent syphilis and low titre. Clinical and serological follow up of infants born to seropositive mothers were taken. Infants were classified to have passively acquired antibodies which may be present upto around 15 months of age⁴.

Results

On Retrograde data analysis there were a total of 15799 Antenatal cases cases who were subjected to RPR tests which showed that among 15799 serum samples tested for VDRL, 18 cases were positive (0.11%) both by RPR & TPHA.

Table 1: Year wise distribution of syphilis seroprevalence in pregnant women

YEAR	TOTAL TESTED	POSITIVE CASES	POSITIVITY RATE
2014	2360	5	0.21%
2015	2322	3	0.13%
2016	2380	0	0%
2017	2029	4	0.20%
2018	2294	2	0.09%
2019	2531	3	0.12%
2020	1883	1	0.05%

Total Antenatal women screened – 15799,
positivity rate- 0.11%

Year wise distribution of cases showed a decrease in incidence of VDRL among the antenatal women. Most positive cases were found in women

age (20 – 34 years) that is the reproductive age group. The trend is shown in table 2

Table – 2: Age wise distribution of cases

YEAR	15 -19 years		20- 24 years		25-34 years		35-45 years		TOTAL	Positive cases
	total	positive	total	positive	total	positive	total	positive		
2014	250	-	884	3	965	1	256	1	2360	5
2015	193	-	854	-	1065	3	207	-	2322	3
2016	148	-	942	-	992	-	298	-	2380	nil
2017	202	-	796	-	821	3	206	1	2029	4
2018	228	-	847	1	905	1	312	-	2294	2
2019	136	-	931	1	1265	2	196	-	2531	3
2020	156	-	511	1	997	-	21	-	1883	1

Maternal and Fetal outcome

The cases were studied in accordance with the age of the mother in years , Gestational stage of diagnosis of syphilis, if any previous history of detection with syphilis, any History of HIV, Maternal treatment, Adverse pregnancy outcome

and neonatal outcome. 17% were detected in the 1st trimester, 44% were detected during 2nd trimester, and 39% were detected at 3rd trimester /at birth. Adverse pregnancy outcomes were seen in cases which presented in the 3rd trimester or at term.

Table- 3: Maternal and Fetal outcome

Case	Age of mother in years	Gestational stage of diagnosis of syphilis	Previously detected with syphilis	History of HIV	Maternal treatment	Adverse pregnancy outcome	Neonatal outcome
1.	26	22 weeks	No	Positive	Treated	Nil	Adequate
2.	20	18 weeks	No	Positive	Treated	Nil	adequate
3.	22	29 weeks	Yes	no	Treated	Nil	adequate
4.	24	13 weeks	No	No	Treated	Nil	adequate
5.	36	12 weeks	Yes	No	Did not follow up	-	-
6.	27	30 weeks	No	No	Treated	Baby small for gestational age	adequate
7.	31	11 weeks	No	No	Treated	Nil	adequate
8.	35	40 weeks	No	No	Presented late(not treated)	Intrauterine death	-
9.	34	26 weeks	No	No	Treatment started ,referred to a higher centre for management	Ultrasound findings of congenital Syphilis	Treated with Penicillin
10.	20	39 weeks	No	No	Presented late(not treated)	baby's CSF was suggestive of congenital Syphilis	Treated with Penicillin
11.	31	34 weeks	No	No	Treated	Preterm delivery at 34 weeks	adequate
12.	25	26 weeks	yes	No	Treated	Nil	adequate
13.	22	15 weeks	No	No	Treated	Nil	adequate
14.	28	19 weeks	No	No	no further data is available about placental status	Spontaneous abortion at 19 weeks	-
15.	21	18 weeks	No	No	Treated	Nil	adequate
16.	32	39 weeks	No	No	Treated	Baby small for gestational age	adequate
17.	23	31 weeks	No	No	Treated	Preterm delivery	adequate
18.	25	24 weeks	No	No	Treated	nil	adequate

Discussion

Syphilis can have an adverse pregnancy outcome which includes still birth, abortions perinatal death and neonatal infections hence screening of antenatal women should be continued for early diagnosis and management of syphilis in pregnancy. Syphilis Infection is a worldwide public health problem with rates of congenital Syphilis rising in several parts of the world.⁵ Age wise distribution most cases were found between 20 -35 years The median maternal age at delivery was 30 years in this study which corresponds to studies done by Lumbiganon et al⁶ and Maria et al⁷.

Syphilis seroreactivity among pregnant women is highly variable depending on population, geographic distribution and various groups screened all over the world and in India⁶. It is as low as 0.02% to as high as 12.1% among the world's population⁸. The prevalence of syphilis among Antenatal cases in India is 0.10%⁴. However positivity varies in different parts of the country, Nair et al⁹ (0.36%), Chen et al¹⁰ (1.6%), Fatima et al¹¹ (0.15 %), Maria et al⁷(0.15 %) Jahan et al¹² (0%). Our study also showed low prevalence of 0.11%. The study does not reflect the true prevalence in the community as it is a District Hospital based study which can be intensified in the state. Congenital Syphilis can be theoretically eliminated through early antenatal care it can be achieved by prompt treatment of pregnant women with a positive serology ideally by 24 weeks of gestation^{13,14} However coverage of 1st and 2nd Trimester screening and timely Antenatal care treatment is still a problem. In our study women who were diagnosed during 1st and 2nd Trimester were treated well. Women who did not follow up and were diagnosed late had adverse neonatal outcomes. Similar studies by Hawke et al¹⁵ showed lower prevalence of adverse outcomes in women who had received intervention in 1st or 2nd trimester of pregnancy.

The infants in our study attended all their consultations. Of the 15 infants born, 13 were less likely congenital syphilis who were not treated

and were monitored every 2-3 months for at least 6 months. No treatment failures were revealed in our study. 2 infants were treated with Penicillin. Low incidence in our study could be due to greater awareness among the people. It also shows that the healthcare facility is easily accessible and provides good quality services and shows proper implementation of national programmes in an efficacious way

Conclusion

The study encourages all pregnant women to seek care in 1st and 2nd Trimester of pregnancy to avoid preventable adverse outcomes. It also aims at early detection of Syphilis and treatment of infected partner and access to sexual healthcare services. Screening for syphilis in antenatal women is an important public health approach to prevent the sexual transmission of syphilis and subsequent vertical transmission of congenital Syphilis. Our study showed a declining rate of Syphilis as a good indicator. The findings could be interpreted as an effective implementation of program and awareness in the public about using barrier contraceptives in prevention of STDs.

Nevertheless we support screening of pregnant women in spite of its low prevalence rate and a review of policy of routine Syphilis screening can be done as an ongoing process in view of low sero prevalence rate of Syphilis to prevent adverse pregnancy outcomes.

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Goa State Aids Control Society

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