Section: OBG

Original Research Article

STUDY OF SYPHILIS IN PREGNANCY AT NSCB MEDICAL COLLEGE, JABALPUR

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Abstract

Background: Syphilis is a systemic, sexually transmitted infection caused by Treponema Pallidum. The primary route of transmission is sexual. Inadequate treatment in primary stage, leads to adverse outcomes, particularly of concern in pregnancy due to risk of maternal to fetal transmission. It manifest as spontaneous abortions, stillbirths, fetal losses, neonatal deaths, premature and low birth weight infants and congenital syphilis, thus having risk of perinatal and neonatal mortality. The aim is to determine prevalence of Syphilis in pregnancy and to study pregnancy outcome. **Materials and Methods:** Study includes 1600 women, of which 10 found to be syphilis positive. **Result:** The prevalence of syphilis in pregnancy found to be 0.625%.Majority of women in age group 20-30 year(80%), primigravida(60%), rural background (80%),low socioeconomic status (80%).Majority(60%)were detected in 1sttrimester and in latent stages. In 6 cases, either of the couple had past history of STIs and syphilis infection. One couple was HIV positive. In7 cases both women and their partner received Penicillin as per National STI guidelines Majority underwent institutional delivery and vaginal birth. Out of 8 live newborns 2(20%)found to be seropositive, 2(20.0%) were intrauterine death. Majority of newborns were normal weight. **Conclusion:** Syphilis during pregnancy still remains global public health problem and is challenge to obstetrician in particular. Young age, primigravida, rural background, low socioeconomic status, poor education, no contraceptive usage were commonest affected. ANC screening and penicillin therapy prevent congenital syphilis. RPR test is more effective non-treponemal test to detect syphilis effectively.

INTRODUCTION

Treponema pallidum is the bacterium that causes the systemic, sexually transmitted illness known as syphilis. Sexual intercourse is the main way the disease is spread. If the original, acute stage is not appropriately managed, it results in chronicity and negative systemic effects. Because there is a chance that it might be passed from the mother to the foetus during pregnancy, it is very concerning. Mother to foetal transmission can reach 80% and can reach >90% in cases of main infections left untreated.

Maternal to child transmission (MTCT) carries a higher risk of perinatal and neonatal mortality because it can cause major unfavourable outcomes such as spontaneous abortions, stillbirths, late foetal losses, neonatal deaths, preterm and low birth weight children, and congenital syphilis.[1]

Untreated syphilis can have harmful effects on unborn children, although it is preventable and treatable. The burden of perinatal morbidity and death is significantly reduced by interventions related to screening and treatment in pregnancy. Early pregnancy screening for maternal syphilis, followed by prompt and adequate treatment of seropositive mothers with at least one intramuscular injection of 2.4 million units of the long-acting penicillin benzathine, cures syphilis in both mother and child and stops the majority of complications related to mother-to-child transmission (MTCT).[2]

In order to bring the MTCT of syphilis to an acceptable low level, WHO initiated the worldwide eradication of congenital syphilis programme in 2007.[3]

Congenital syphilis incidence in India has been found to be 0.6/1000 live births, while sero-

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prevalence among expectant mothers is 0.38%. A national strategy called "Towards Elimination of Parent-to-Child Transmission of Syphilis" is based on the WHO's Regional Strategy for Eliminating Congenital Syphilis in SEAR (2011-2015) and aims to eradicate congenital syphilis in order to reduce reproductive waste and ultimately improve the health of the mother and the newborn.

STI/RTI control and prevention programme under National AIDS Control Organisation (NACO) in collaboration with reproduction, maternal, newborn child health and adolescent (RMNCH+A) programme under National Health Mission launched the "Eliminate Parent to Child Transmission of Syphilis" (EPTCT) national strategy in February 2015 to help achieve Millennium Development Goals 4 (Reduce Child Mortality), 5 (Improve Maternal Health) and 6 (Combat HIV/AIDS, Malaria).[1]

Achieving an incidence of congenital syphilis fewer than 0.3 cases per 1000 live births is considered to be elimination. Important components of this strategy include the early diagnosis and treatment of syphilis in pregnant women, their sexual partners, and their offspring. The most effective time to screen and test for syphilis in all pregnant patients is during their initial visit, particularly in the first trimester.[4] This is part of the bundle of necessary prenatal services.

Aims

1. To find out how common syphilis is in pregnant women.
2. To research the results of pregnancies.

MATERIALS AND METHODS

Settings and Design: prospective observational study.

Inclusion Criteria

1. All pregnant women visiting prenatal clinics, regardless of their trimesters or history of syphilis, must meet the inclusion criteria.
2. All pregnant women who have been referred to the prenatal clinic at NSCB from other facilities as Syphilis positive.
3. All pregnant people who arrive at the labour ward directly into labour
4. Women giving their permission to take part in the research.

Exclusion Criteria

1. Syphilis in all non-pregnant women.
2. Women declined to consent to the research.

Methodology

- The research comprised women who satisfied the requirements for inclusion. The study group gave its informed permission and the institutional ethics committee gave its ethical approval.
- No matter what trimester they were in—ideally, the first trimester—all pregnant women who attended prenatal clinics had their syphilis status checked. A systematic questionnaire was used to identify high risk behaviours based on demographic data.
- An obstetrical general examination was conducted. RPR testing kit results in a serological diagnosis of syphilis, which is then followed by a serum titre evaluation.
- Newborns and the partners of syphilis-positive women were tested for HIV/AIDS at the same time as all other women.
- The first test result was retested in the later stages of pregnancy or after delivery if it came out negative in women with high risk features.
- Syphilis-positive women and their partners had treatment and post-treatment care.
- All newborns with titres that were four times greater than those of their mothers were put on penicillin medication for 10 days, monitored at 6 months, and are still being monitored at 24 months.
- NACO and the STI/RTI control and prevention program's national recommendations were followed in terms of testing and treatment methods.
- Results of pregnancies were examined.
- At the end of the research period, all the data were assembled and examined.
- Utilising statistical analysis
- After entering the data into the predesigned proforma and moving it to MS Excel, SPSS version 21 statistical software was used to analyse it. The Student T Test was utilised for quantitative data, while the Chi Square Test and Fischer Exact Test were applied to qualitative data. Significant results are those with a p value of 0.05 or less.

RESULTS

In all, 1600 cases were examined, of which 10 were found to be syphilis positive. Syphilis was shown to be prevalent in pregnant women 0.625% of the time.

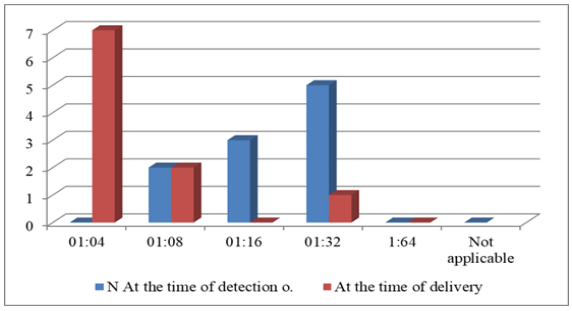

Figure 1: Antibody Titers

Table 1: Demographic distribution

Demographic	No. of Cases	Percentage
Age		

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Less than 20 years	0	0.0%
20-30 years	8	80.0%
30-40 years	2	20.0%
More than 40 years	0	0.0%
Locality		
Rural	8	80.0%
Urban	2	20.0%
Education		
Primary School	5	50.0%
Middle School	0	0.0%
Higher secondary School	1	10.0%
Graduate and Above	1	10.0%
Illiterate	3	30.0%
Occupation		
Both skilled	2	20.0%
Only wife skilled	0	0.0%
Only husband skilled	2	20.0%
Both unskilled	6	60.0%
Socioeconomic status		
Upper class	0	0.0%
Middle	2	20.0%
Lower	8	80.0%

Table 2: Risk Behavior

Contraception usage	**No. of Cases**	**Percentage**
Natural	0	0%
Barrier	2	20.0%
Intrauterine device	0	0%
Hormonal OCP	0	0%
Hormonal injectable implant	0	0%
None	8	80.0%
Substance abuse	No. of Cases	Percentage
Tabaco	4	40.0%
Smoking	1	10.0%
Alcohol	2	20.0%
Multiple	1	10.0%
None	2	20.0%
Partner sexual behavior	No. of Cases	Percentage
Monogamous	8	80.0%
Promiscuous	2	20.0%
Past History	No. of Cases	Percentage
Wife	3	30.0%
Husband	2	20.0%
Both	1	10.0%
None	4	40.0%

Table 3: Maternal profile and Neonatal Outcome

Gravida	**No. of Cases**	**Percentage**
Primigravida	6	60.0%
multigravida	4	40.0%
Trimester	No. of Cases	Percentage
1st trimester	6	60.0%
2nd trimester	2	20.0%
3rd trimester	1	10.0%
During labour	1	10.0%
Syphilis stage	No. of Cases	Percentage
Primary	2	20.0%
Secondary and tertiary	0	0.0%
Latent	6	60.0%
Neonatal outcome	No. of Cases	Percentage
Live	8	80.0%
Intrauterine death	2	20.0%
Newborn seropositive status	No. of Cases	Percentage
Positive	2	20.0%
Negative	6	60.0%
Not applicable	2	20.0%
Fetal weight	No. of Cases	Percentage
Extreme low birth weight	1	10.0%
Very low birth weight	1	10.0%
Low birth weight	1	10.0%
Normal weight	7	70.0%

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DISCUSSION

Clinicians face difficulties treating syphilis. Pregnancy-related syphilis continues to be a major factor in perinatal morbidity and death. Congenital syphilis, intrauterine mortality, stillbirth, and spontaneous abortion are all brought on by maternal syphilis. Early latent or late latent syphilis can develop during pregnancy in primary, secondary, or tertiary stages. It is advised to screen asymptomatic pregnant women. If the mother receives sufficient therapy in the early stages of pregnancy, ideally before the second trimester, the foetus can be healed and the detrimental effects on the foetus are low. Out of the 1600 women that were checked for syphilis, we discovered 10 positive women. Syphilis was therefore shown to be prevalent in pregnancy at 0.625%.

Prevalence of Syphilis among pregnant women decreased dramatically (p 0.01) from 3% in 1996 to 0.84% in 2005, with the largest decreases happening in 1997 (from 3% to 2.48%) and 2004 (from 1.4 to 1%), according to Sethi S, Sharma K, et al.[5] A prevalence of 0.036% was reported by Gangwar P et al. in 2020.

Syphilis prevalence among expectant mothers in India may be declining as a result of doctors and nursing personnel educating patients about the disease's characteristics and risks during prenatal visits. Additionally, one of the reasons for the low frequency may be because sexually transmitted illnesses are now successfully managed in India, which is another contributing factor.[5]

We saw most of the women in the 20–30 age range (80%), followed by two women in the 30–40 age bracket (20%). 61% of women in the 20–30 age range were reported by Gangwar P et al.[6]

The bulk of instances (48.03%) were reported by Tanwar R et al in the 20–25 year age range. Our findings concur with those of these earlier investigations.[7,8] The majority of women fell into this age range because it is in India regarded to be the reproductive age group.

We discovered 8 instances (80%) in rural regions and 2 cases (20%) in cities. Our findings align with those of studies by Gangwar P et al,[6] (62.3%), Tanwar R et al,[8] (62.79%), and Jahan N et al,[9] (69.7%).

Our hospital, Medical College Hospital, is a tertiary care facility and is surrounded by several nearby villages, which may be the cause of the bulk of cases coming from rural regions.

In our study, 50% of patients had just a first-grade education, and 30% were illiterate.

Our findings concur with those of Tanwar R et al,[8] and Gangwar P et al,[6] who showed that the greatest percentage of patients were illiterates in 32.48% and 44% of the cases, respectively.

In 60% of the cases, the pair was an unskilled worker from a lower socioeconomic class.

According to Gangwar P et al,[6] 63.6% of those impacted are jobless persons. According to Tanwar R et al,[8] 30.9% belonged to the lowest socioeconomic class, and 26.8% to the higher lower Class. Our research's findings are close to those of a study done in North India,[10] which revealed that 78.8% of patients belonged to a lower socioeconomic level. The causes for the infection include ignorance, poverty, low socioeconomic level, and lack of education.

Out of 10 positive instances, 60% were first-time mothers, 10.0% were second- and third-time mothers, respectively.65.7% of instances, according to Tanwar R et al,[8] were Primigravida.

Our findings are close to those of Sheena Ann Simon et al.'s study,[11] which found that 82.72% of STI cases in pregnancy included Primigravida. In contrast, a different research by Apparao P et al,[10] found that multigravida had a higher prevalence of STIs.

This is true for women who are primigravida, which we discovered to be the majority of women in the age range of 21 to 25. Early marriage is a well-established practise in India, particularly in the countryside. In the current study, 60% of cases were found in the first trimester, followed by 20% in the second and 10% in the third. 10% reported experiencing labour firsthand.

Our findings are consistent with a research by Tanwar R et al,[8] that found 74.4% of syphilis cases to be diagnosed in the first trimester, followed by cases in the second (21.4%) and third trimesters (2.2%).

First trimester (80.3%), followed by second trimester (18.9%), and third trimester (0.8%), were the results published by Jahan N et al.[9]

We did not discover a link between BMI and syphilis. Similar outcomes were obtained by Andrea L et al.[12]

We discovered 2 women in our research who had previously had abortions. (Two thirds). Similar findings were seen in Tanwar R et al's study[8] (8.3% cases). The findings are consistent with earlier research by Torres et al,[13] in which 1.5% of instances included abortions and 3.4% had prior foetal losses.

From 14 weeks of gestation, spirochetes can cross the placenta and infect the foetus, and the chance of infection increases with gestational age.[14]

In our study, 80% of participants used no form of contraception, while 20% opted for a barrier approach. Low socioeconomic strata's lack of knowledge, awareness, customs, and taboos have an impact on this.

Results of a research by Catherine A. Koss et al,[15] revealed that regular condom use lowers the chance of contracting syphilis.

Out of 10, 20% of cases had alcohol consumption and 40% involved cigarette usage.

There is no research in India that link smoking, drinking, and syphilis during pregnancy.

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But a Cambridge study discovered smoking to be a significant risk factor for syphilis.[16]

In the current study, 50% of women had a titre of 1:32 at the time of detection, 30% had a titre of 1:16, and 20% had a titre of 1:8. At the time of birth, all women had a reassessment and all of them received penicillin treatment as prescribed. The titre fell to 1:4 in 70% of cases and to 1:8 in 20%

Our findings concur with those of a research by Huanyuan Luo et al,[17] which found that 88.59% of women delivered with a serum titer below 1:4.

In one instance, we saw an increase in titre from 1:16 to 1:32. She had TPHA to determine the infection's conformation. The administration of a second dosage of penicillin was seen. Her unborn child tested positive for syphilis.

The level of antibodies represents the severity of the illness. While a fourfold rise implies active illness, a fourfold decline shows adequate treatment.[18]

60% of the 10 individuals in our research were latently infected with syphilis when they were first discovered.

Results are comparable to those of a research by Huanyuan et al,[17] which found that 92.65% of cases were found in the latent stage, with the subsequent stages being 5.1% in the primary, 1.6% in the secondary, and 0.64% in the tertiary stage.

When acute or secondary syphilis is not treated yet the clinical symptoms go away, latent syphilis develops.[19]

Only 2 instances in our research displayed the physical symptoms in the form of painless ulcers. Ulcers recover in 4 to 6 weeks even without therapy. There might be a subsequent latent infection. Untreated cases are more likely to develop secondary and tertiary types.[20]

In our study, 60% of cases (either of the pair) had a history of STIs and syphilis, whereas 30% of cases exclusively included the wife, 20% involved the husband, and 10% involved both partners.

The causes of recurrence include ignorance, failure, ineffective therapy, and failure.

10% of couples were HIV positive, we discovered.

HIV/ELISA reactive was reported to be 5.1% and non reactive to be 94.9% by Gangwar P et al.[6]

STIs and RTIs enhance the risk of contracting HIV by compromising mucosal and epithelial barriers.

Because of spouse separation and lax social regulation, migration fosters informal and business interactions.

In 7 cases, Penicillin was used to treat both the women and their partner in accordance with national STI recommendations. 30% of couples had favourable treatment. Out of the remaining 7 partners, 4 received full therapy, while 3 did not show up after receiving counselling. Despite the fact that their spouses received full care. To stop reinfection and continued spread of STIs and syphilis, partner therapy is essential.

Pregnancy-related syphilis should be appropriately treated in accordance with its stage and duration. Even a single Penicillin injection to the mother can reduce the rate of transmission from mother to foetus, which can enhance foetal and neonatal outcomes.[19]

In our study, all deliveries took place in hospitals, with 60% vaginal births and 4 caesarean sections. Institutional delivery aids the woman in seeking appropriate care, titer monitoring, and newborn and spouse care.

The two newborns in our research who were seropositive received appropriate penicillin treatment and were monitored.

In our study, 80% of instances resulted in live births and 20% resulted in intrauterine deaths.

20% of the eight living babies tested positive for syphilis. Compared to their mother, their titre was four times higher. Hepatomegaly and anaemia were found during the physical examination. Additionally, both infants displayed mild jaundice.[21]

An ultrasound was performed on each of the nine (90%) pregnant women to check for congenital syphilis symptoms. Hepatomegaly and a thick placenta were seen in one instance. One woman appeared to be in labour immediately. Her placenta was examined after birth and found to be huge and thick.

When maternal syphilis is present and sonographic indications of foetal hydrops, an unusually big belly, hydramnios, and a thick placenta are observed, foetal syphilis is assumed to be the cause.

70% of babies in our research were of normal weight, and 10% fell into the categories of severe low birth weight, very low birth weight, and low birth weight, respectively.

Huanyuan Luo et al.'s research has produced similar findings.[17] There were no notable variations between childbearing women with and without syphilis in the frequency of LBW.

Most live babies are reported in several studies to be symptom-free at delivery. Only infections can cause low birth weight. Traditional classifications of congenital syphilis include early congenital, in which symptoms begin to manifest during the first two years of life, and late congenital, in which symptoms manifest throughout the course of the first two decades.

CONCLUSION

Syphilis infection during pregnancy still remains a global public health problem and is challenge to obstetrician in particular. Prevalence in our study came out to be 0.625%.Young age between 20 to 25 years, primigravida, rural background, low socioeconomic status, poor education, no contraceptive usage were the commonest affected.

Latent stage may remain over years. Early registration ANC screening in pregnancy and penicillin therapy as per National guidelines prevent congenital syphilis. Syphilis detection in late

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trimester or direct in labour is associated with adverse fetal outcome.

Congenital syphilis and the adverse outcomes of maternal to child transmission of syphilis can be prevented with antenatal screening and penicillin therapy.

Syphilis is 100% treatable and preventable. Congenital Syphilis is a preventable and curable disease.

RPR test is diagnostic screening test for syphilis.

'EPTCT' of syphilis is for Elimination of Parent to Child Transmissionof syphilis is a new National Strategy launched by the MOHFW in February 2015.

Limitations of our study

Present study is based on small sample size and is a part of ongoing intervention, therefore this needs a concise interpretation. Our study was conducted in COVID era, which has certainly affected the antenatal OPD attendance. Therefore with small sample size it is difficult to state the general trend of syphilis in pregnancy. It demands further extensive research in our area.

Recommendations

For the elimination of congenital syphilis, universal registration of pregnant women at 1st ANC visit, their Screening for syphilis is recommended. Identification & prompt treatment to all syphilis-reactive pregnant women including their Partners and infants would certainly improve the pregnancy outcome.

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