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Seroprevalence of syphilis among Sudanese pregnant ladies in Berber city, Sudan

Abstract

Background: Because syphilis is often asymptomatic, it might go unrecognized. Furthermore, infection transfer from mother to unborn child is a concern. Preventing poor pregnancy effects in relation with maternal infection by screening and treating women for syphilis throughout pregnancy**.** Aiming at exploring anti treponemal antibodies among pregnant women in Berber Teaching Hospital our study was implemented.

Methods: A cross-sectional, hospital based study was performed at Berber Teaching Hospital in River Nile State. Encompassed pregnant women who attended Hospital. Following an explanation of the study's goal, 100 serum samples were taken, and data was collected from each respondent using an interview questionnaire, 100 blood samples were obtained to identify syphilis anti bodeis. All specimens were analyzed using the Rapid Plasma Reagin test (RPR), which was confirmed by an enzyme linked immune sorbent assay (ELISA) (fortress diagnostics/UK). Statistical Package for Social Sciences (SPSS version 19) was used to manage informational gathered.

Results: ELISA found 9% of syphilis positive patients, whereas RPR identified 10%.Age of respondents ranged between 16 to 43 years, 53 % of study participants categorized at (30 – 36 years) and 62 % at third trimester of gestational. The highest prevalence of syphilis was 4 % reported in age group (23 – 29 years) and 5% at third trimester.

Conclusion: The syphilis sero-prevalence among pregnant women in the current research was 9% by ELISA and 10% by RPR. More precise and sensitive procedures, such as PCR, must be used to corroborate the findings.

Keywords: syphilis, pregnant, berber, Sudan

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Abbreviations: HIV, human immunodeficiency virus; WHO, World health organization; RPR, rapid plasma regain; ELISA, enzyme-linked immunosorbent assay

Introduction

Syphilis, the most prevalent sexually transmitted infection, is caused by the bacterium Treponemapallidum.[1] Syphilis is spread predominantly by sexual intercourse (venereal syphilis), which includes vaginal, oral, and/or anal contact with or without penetration, or during pregnancy from mother to fetus. The spirochete can pass through intact mucous membranes or damaged skin.[2,3] In vitro (through placenta) transmission is also possible, as is inadvertent inoculation from infected materials. Syphilis is classed as a Sexually Associated Disease because it is nearly usually transmitted through sexual contact.[4] With the escalating frequency of Human Immunodeficiency Virus (HIV) infection, syphilis now has a higher risk of morbidity and mortality. While syphilis is uncommon in affluent societies, it is far more frequent in underdeveloped countries, where incidence among blood donors can exceed 25%.[5,6] With the escalating frequency of HIV infection, syphilis now has a higher risk of morbidity and mortality. While syphilis is uncommon in affluent societies, it is far more frequent in underdeveloped countries, where incidence among blood donors can exceed 25%.Syphilis is responsible for around 20% of perinatal fatalities in Sub-Saharan Africa. Intravenous drug users, HIV positive people, and males who have sex with men have greater rates. In 2007, men had six times the rate of syphilis as women in the United States, compared to roughly equal rates in 1997. In 2010, African Americans accounted for nearly half of all cases.[6] According to the World Health Organization, around 10.6 million new cases were recorded between 2005 and 2008.[7] First-line treatment for primary, secondary, and early latent syphilis is benzathine penicillin, followed by a single dose of oral azithromycin.[8] In the treatment of early syphilis, azithromycin was shown to be just as effective as benzathine penicillin. Benzathine penicillin is first-line treatment for late latent syphilis, and in neurosyphilis, it is first-line treatment. oral probenecid with procaine penicillin.[9] Many preceding syphilis researches have been published in Sudan; the prevalence of syphilis among pregnant women in Sudan's Tricapital Khartoum state was found to be 9% by[4] and 2.4 % by.[10] Because primary syphilis is often asymptomatic, it might go unrecognized. Furthermore, infection transfer from mother to unborn child is a concern. Preventing poor pregnancy effects in relation with maternal infection by screening and treating women for syphilis throughout pregnancy. The goal of this study was to finding out how common syphilis is among pregnant women at Berber Teaching Hospital.

Methods

During the months of April to October in 2019, a cross-sectional, analytical study was performed at Berber Teaching Hospital in River Nile State, which encompassed pregnant women who attended Berber Teaching Hospital. Following an explanation of the study's goal, 100 serum samples were taken, and data was collected from each respondent using an interview questionnaire with informed permission. Demographic information is included in the statistics (age and trimester). In the department of gynecology and obstetrics of Berber Teaching Hospital, 100 blood samples were obtained from pregnant women ranging in age from 16 to 43 years to identify seropositivity of syphilis. All specimens were analyzed using the

Rapid Plasma Reagin test (RPR), which was confirmed by an enzyme linked immune sorbent assay (ELISA) (fortress diagnostics/UK).

Five ml of blood was extracted under aseptic conditions using sterile disposable syringes. Blood was collected in sterile plain containers and permitted to clot at room temperature. After centrifuging each blood sample for 5 minutes at 1500 rpm, the serum was divided into separate sterile plain containers. .Laboratory codes were used to mark samples. Serum samples were collected in a simple sterile container labeled with the laboratory number, and then carried in an ice bag from the collection station to the lab, where they were preserved for analysis. .Until the time of analysis, the samples were maintained frozen at -20°C without the use of preservatives (not more than 3 months). The Rapid Plasma Reagin Test (RPR) and enzyme immune sorbent assay (ELISA) were used to confirm the presence of syphilis. The data was validated twice, coded, and entered into the Statistical Package for Social Sciences (SPSS version 19). The findings were presented using tables and figures.

Ethics approval

The Shendi University, faculty of medical laboratory sciences ,research ethical committee ,and the River Nile State Ministry of health both granted their authorization to undertake this study.

Results

In the department of gynecology and obstetrics at Berber Teaching Hospital, 100 serum blood samples were taken from pregnant women of various ages to determine syphilis seroprevalence. All specimens were analyzed repeatedly, first by the Rapid Plasma Reagin test (RPR) and subsequently by the Enzyme-Linked Immunosorbent Assay (ELISA) as confirmatory. ELISA found 9% of syphilis positive patients, whereas RPR identified 10%.Age of respondents ranged between 16 to 43 years, 53 % of study participants categorized at (30 – 36 years) and 62 % at third trimester of gestational, Table 1.The highest prevalence of syphilis was 4 % reported in age group (23–29 years) and at third trimester 5% as shown in Table 2.

Table 1 Distribution of study population according to age, trimester & tests

Parameter	Characteristic	Frequency	Percent %
	16 - 22	15	15
	23 - 29	41	41
Age/Year	30 - 36	53	53
	37 - 43	11	11
	First	12	12
	Second	26	26
Trimester	Third	62	62
RPR test	Positive	10	10
	Negative	90	90
ELISA test	Positive	9	9
	Negative	91	91
Total		100	100

Table 2 Distribution of study variables according to lab results

Parameter	Characteristic	ELISA		Total	RPR		Total
		Positive	Negative		Positive	Negative	
	16 - 22	3	12	15	3	12	15
	23 - 29	4	37	41	4	37	41
Age/Year	30 - 36	2	31	33	2	31	33
	37 - 43	0	11	11	1	10	11
Total		9	91	100	10	90	100
	First	1	11	12	2	10	12
	Second	3	23	26	3	23	26
Trimester	Third	5	57	62	5	57	62
Total		9	91	100	10	90	100

Discussion

From April to October 2019, researchers at the Berber Teaching Hospital in River Nile State, Sudan, researchers performed a study to determine the prevalence of syphilis among pregnant women. A total of 100 samples were tested for syphilis, with ages ranging from 16 to 43 year. By ELISA, which was the gold standard method in this study, the seroprevalence of syphilis among pregnant women in

Berber Teaching Hospital was (9 %). In relation to other publications, we can notice various results. In respect to previous WHO studies, these findings are impressive (1.6 %).[10] This prevalence, however, was thought to be almost comparable to that reported by Kadiga, who reported seroprevelence of syphilis among pregnant women in Khartoum Teaching Hospital (7%).[11] The percentage of those infected with syphilis was greater in the age groups 23-29 years (4%) and 16-22 years (3%) than in the other age categories. These conclusions matched those published by.[4] In this study, 10 % were positive by (RPR) test, 9 % were positive when verified by enzyme linked immunosorbant Assay, and one percent was positive by (RPR) test but negative when validated by ELISA. There was no discernible difference between the two methods. The RPR result in this research has a specificity of 98.8%, and one of the ELISA negative samples has a positive RPR result, which might be attributable to a variety of factors. Anti-cardiolipin antibodies generated in other illnesses, such as narcotic drug addiction, chickenpox, severe malaria, and HIV, are linked to the RPR's false positive result.[12]

The rest of Africa's syphilis prevalence rates have been reported to range from 2.5 % in Burkina Faso to 13.7 % in North West Ethiopia,[13] 17.4% in Cameroon[10] and a high of 42% in Mozambique.[14] It's almost analogous to a research conducted in Sudan's capital, Khartoum,[4] maternal syphilis was reported to be involved in 9% of prenatal care attendance.

Conclusion

The syphilis sero-prevalence among pregnant women in this research was 9% by ELISA and 10% by RPR. More precise and sensitive procedures, such as PCR, must be used to corroborate the findings. All pregnant women should be investigated for syphilis during their pregnancy, and any instances should be treated to avoid future complications in the mother and transfer of these infections to their unborn infants. Females of all ages increasingly require education in rural areas. Many centers for voluntary screening for sexually transmitted diseases before marriage for both males and females are accessible.

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Conflicts of interest

There are no conflicting interests declared by the authors.

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