Research Article

Serodetection of Herpes Simplex Virus Type 2 Infection among Pregnant Women in River Nile State

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Abstract

Introduction: Genital herpes remains a major problem causing considerable abortion among pregnant women and a higher risk to their infants leading to serious complication including intrauterine growth retardation, intrauterine fetal death, preterm labor, spontaneous abortion, congenital and neonatal herpes infections. The objective of this study to determine the prevalence of HSV-2 virus among pregnant women in River Nile State in Sudan.Method: A total of 75 pregnant women their age ranged from 16 to 44 years included in this study. 3 ml of whole blood was collected from each pregnant woman in heparin, Plasma was obtained by centrifugation, the plasma examined for the presence of Herpes simplex virus type-2 by immune Chromatography Test. **Results**: The result showed that out of 75 blood specimens investigated, 28(37.3%) were positive for HSV-2 infection, 25(89.3%) result positive for IgG antibody of Herpes simplex virus 2 and only 2 (7.1%) positive for IgM and 1 (3.6%) positive for both IgG and IgM. Conclusion: The study concluded that there is no statistically significant association between HSV-2 infection with age, trimester of gestation, abortion and educational level.

Keywords: ***Serodetection, HSV2, Pregnant Women ,River Nile State.***

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Introduction

Herpes simplex virus (HSV) infection is one of most common viral sexually transmitted disease (STD) worldwide. Most genital herpes is caused by *HSV-2* and is almost transmitted sexually . [1]

HSV-2 is the leading cause of genital ulcer disease in the developing countries. *HSV-2* infection is highly prevalent worldwide although most infected persons are either a symptomatic or have genital symptoms that remain unrecognized . [2]

Herpes viruses derived name from the Greek word herein, which means to creep. They are double strand DNA virus that belongs to the family *Herpesviridae*, subfamily Alphaherpesvirinae. Herpes virus cause persistent infection in human around the world . [3]

HSV-2 infection in pregnant women can lead to abortion, premature labor, congenital and neonatal herpes (Egbagba, 2015). Worldwide the number of individuals seropositive for HSV-2 increase with age (27-28) (Whitley, 2006). *HSV-2* seroprevalence in the US has increased by 30%, comparing the developing countries, substantially higher rates of *HSV-2* has been observed in sub-Saharan Africa, where prevalence in adult range from 30% to 80% in women. Prevalence in the general population of Asian countries shows lower values, from 10% to 30% . [4]

Congenital HSV infection is rare but is higher than that of congenital syphilis, toxoplasmosis, and congenital rubella in years in which the virus was not epidemic. It shares clinical features such as microcehaly, hydrocephalus, and chorioretinitis with other congenital infections and is usually manifested by clinical abnormalities at birth. Postnatal acquisition of *HSV* is almost always due to *HSV-1* and is associated with contact with hospital personnel or family members who are shedding *HSV-1* Most neonatal infections result from exposure to HSV during delivery although in uteri and postnatal infections occasionally occur . [5]

Most cases of genital HSV infection in women occur without signs or symptoms of disease and are associated with cervical viral shedding . [5] The aim of this study was to determine the frequency of Herpes Simplex Virus type 2 (HSV-2) infection among pregnant women in River Nile State.

Method:

Specimen collection:

Following aseptic applications , 3 ml of venous blood were obtained from each subject , and plasma were extracted by centrifugation at 3000 rpm .

TORCH test :

The pouch was brought to the room temperature before opening it then the test cassette was removed from the sealed pouch and used it as soon as possible. the test cassette was placed on a clean level service .1 full drop of plasma was transferred and 2 drops of buffer to each specimen well of the test cassette respectively and then the timer was started. Trapping air bubbles in the specimen was Avoiding. Then the colored line(s) appear. The results should be read at 15 minutes and should not interpret the results after 20 minutes .

Result interpretations

Negative test: Red or pink line only at control region.

Positive test: Red or pink lines in both regions (at control and test).

Invalid test: no red or pink line at control region.

RESULTS

In this study a total of 75 pregnant ladies were enrolled for the study, their age ranged from 16 to 46 years, about (57.3%) of them belong to age group (25 to 46) years. Most of study participants were from rural areas 73.3% and only 26.7% were from urban areas. In this study 10.7% of study participants were illiterate, 33.3% reached primary school level, 24% at secondary school level and about 32% already completed their university study. In this study the frequency of *HSV2* among pregnant ladies was 37.3% **(Table 1).**

Table (1): The frequency of HSV2 among the pregnant ladies:

HSV2	Frequency	Percent
Positive	28	37.3%
Negative	47	62.7%
Total	**75**	**100%**

Out of all positive cases only 2 (7.1%) were positive for IgM, and 25(89.3%) were positive for IgG and 1(3.6%) were positive for both IgM and IgG **(Table 2).**

Table (2): Distribution of *HSV2* antibodies among positive cases

HSV2	Frequency	Percent
IgM	2	7.1%
IgG	25	89.3%
IgM + IgG	1	3.6%
Total	28	100%

The study showed that there was no significant statistical correlation between HSV2 infection and age (p. value = 0.648) as in **(Table 3),** trimester (p. value = 0.308) **(Table 4)**, area of residence (p. value = 0.428) **(Table 5)**, abortion (p. value= 0.141) **(Table 6)** and educational level (p .value 0.758) **(Table 7)** .

Table (3): Correlation of *Herpes Simples Virus 2* with age group

Age group	Frequency	Percent %	P .value
16 -25 years(n=32)	11	34.4%	0.648
26 – 46 years(n=43)	17	39.5%	

Table (4): Correlation of *Herpes Simples Virus 2* with gestational trimester

Trimester	Frequency	Percent %	P .value
First (n=17)	٩	52.9%	٠,٣٢٧
Second (n=35)	١١	31.4%	
Third (n=23)	٨	34.8%	

Table (5): Correlation of *Herpes Simples Virus 2* with abortion

Abortion	Frequency	Percent %	P .value
Yes (n=32)	15	46.9%	٠,١٤١
No (n=43)	13	30.2%	

Table (6): Correlation of *Herpes Simples Virus 2* with abortion

Educational level	Frequency	Percent %	P .value
Illiterate(n=8)	3	37.5%	
Primary(n=25)	11	44%	

Secondary(n=18)	5	27.8%	.758
University and above(n=24)	9	37.5%	

Discussion:

In this study the frequency of *HSV-2* infection among pregnant women was 37.3%, this result was higher than the result obtained by (Basim, 2013) in Baghdad who reported that prevalence of *HSV-2* among pregnant women was 4.76% and this difference may be due to difference in study area.[6]

This study revealed that *HSV-2* among pregnant women was 2 (7.1%) for IgM, this result is lower than result obtained by (Maysaa and Hossam, 2007) in Egypt, who revealed that (40%) of study participants were IgM positive for *HSV-2*. This difference may be attributed to different techniques used for detection of the virus TORCH and ELISA techniques. [7]

A high frequency of *HSV-2* IgG (89.3%) was detected in pregnant women. This finding was similar to finding of study conducted among pregnant women at Omdurman Maternity Hospital by (Elsiddig, 2015) where the prevalence of *HSV-2* IgG was (91.1%). [8]

In this study there was no significant statistical correlation of HSV-2 infection with Age (p. value = 0.64) and this was similar to study conducted among European pregnant ladies by (Ferenc, 2011) who revealed that there is no significant statistical correlation between *HSV2* infection with age (p. value =0.12). [9]

In this study there was no significant statistical correlation of *HSV-2* infection with trimester of gestation(p. value = 0.648), this is similar to study conducted by (Aminu, 2014) in Nigeria who concluded that there was no significant statistical correlation of *HSV-2* infection with gestational trimester (p. value=0.260). [10]

In this study there was no significant statistical correlation of *HSV-2* infection with history of abortion (p. value =0.141) and this is differ from result obtained in Iraq by (Musa, 2018) who reported that there was significant statistical correlation of *HSV-2* infection with history of abortion (p. value =0.03) this difference may be due to the difference in sample size between the two studies. [11]

The current study found that there was no significant statistical correlation of *HSV-2* infection with educational level (P. value=0.758) this finding was similar to result obtained by (Ahmed *et al* 2021) in Sudan (P. value=0.43), the similarity may be due to the same study area. [12]

Conclusion

The frequency of *HSV-2* among pregnant women in River Nile State was 37.3%, and there were no significant statistical correlation of *HSV-2* infection with age, gestation trimester, previous abortion and educational levels.

Ethical considerations

Informed consent was obtained from the enrolled pregnant ladies and the study objectives and the method of sample collection were explained, the confidentiality of the laboratory results were guaranteed for all participants

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