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ABSTRACT

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ABSTRACT

Herpes simplex virus still represents the most common and potentially serious viral complication in pregnant women. This cross-sectional hospital-based study aimed to estimate the seroprevalence of infection among pregnant women attending Martyr Ali Abd Alfattah Hospital, eighty blood specimens were collected from pregnant (aged between 15 and 45 years old) that were suspected to be infected, with herpes simplex viruses from Khartoum during November 2019. Specimen examined by using immunochromatography test (ICT) For IgM antibodies. One full drop of serum and two drops of buffer in the specimen was added to the well of the test device and then start the timer, the result was read after 15 minutes. The result showed that all eighty specimens were negative for herpes simplex virus infection. This indicates low prevalence of herpes simplex virus infection among pregnant women attending Martyr Ali Abdelfattah Hospital. Additional studies are needed to sure the low prevalence of the HSV and educational programs must be applied to present the risk factors, route of transmission and method of prevention.

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I. INTRODUCTION

Herpes simplex virus type 2 (HSV2) one of (TORCH), that can cause illness in pregnant women and are responsible for spectrum of diseases ranging from gingivostomatitis to keratoconjunctivitis, encephalitis, genital diseases and infection of newborn, these entire infectious agents induce a shift of immune response during pregnancy from Th2 to Th1 and apoptosis which can be observed clinically as abortion process [1].

HSV2 is the second most prevalent sexually transmitted viral infection worldwide and the most common cause of genital ulceration in the developed world [2]. Intra-uterine herpes simplex virus infection can cause significant morbidity and mortality in the developing fetus if the pregnant mother gets acute infection during pregnancy, the acquisition of genital herpes during pregnancy result in spontaneous abortion, stillbirth, intrauterine growth retardation, preterm labor, congenital and neonatal herpes infections. Genital herpes varies between different countries and between groups of individuals depending on the demographic and clinical characteristics [3].

HSV2 is neurotropic virus that has a large linear, double-stranded DNA genome protected by a capsid with icosahedral symmetry surrounded by an envelope consisting of a lipid bilayer with embedded glycol proteins, having yet a protein acetous region between the capsid and envelope called tegument, belong to alpha herpesvirinae subfamily, within the family Herpesviridae [4]. Transmitted across mucosal membranes and

non-intact skin that migrate to nerve tissues where they persist in a latent state [5]. The danger of intrauterine HSV transmission is highest during the first 20 weeks of gestation this because a Newly infected mother does not have antibodies against the viruses which can lead to congenital anomalies, stillbirth, or abortion [6,2]. Pregnancy induces a transient immunosuppression which increases the vulnerability of pregnant women to viral infections. In addition, may lead to fetal death. After an incubation period of about a week, the active phase begins during the active phase, the virus multiplies explosively between 50,000 and 200,000 new viruses are produced from each infected cell [7].

The primary symptomatic genital herpes infection is usually the most severe, especially in women, it causes blistering and ulceration of the external genitalia and cervix leading to vulvar pain, dysuria, vaginal discharge and local lymphadenopathy [8].

II. MATERIAL AND METHOD

This study was Survey Study. Study to detect Herpes Simplex Virus infection among pregnant women Attending Martyr Ali Abdel Fattah Hospital in Khartoum state Sudan between the periods from September to December 2019. This study was done on pregnant women attending Martyr Ali Abdelfattah hospital. A total of 80 blood samples were collected from pregnant women, all blood sample were transferred into plain blood containers then centrifuged at 3000 RPM for 3 min to obtain sera.

2.1 Immunochromatography test (ICT)

The TORCH Combo Rapid test cassette (serum plasma) is a qualitative lateral flow immunoassay for the detection of IgM antibodies to rubella, CMV, Toxo in serum or plasma specimen, in this test antigen of Rubella, CMV, Toxo and HSV are coated in the test line regions of each section in the test. During testing, the serum or plasma specimen reacts with mouse anti human IgM coated particles in the test strip. The mixture then migrates upward on the membrane by capillary action and reacts with the Rubella, CMV, Toxo,

and HSV specific antigens on the membrane in the test line regions of the respective sections. The presence of a colored line in the test line region or particular section indicates a positive result for the corresponding infection while its absence indicates a negative result for the infection. To serve as procedural control a colored line will always appear in the respective control line regions of all the four strips indicating that proper volume of specimen has been added and membrane wicking has occurred.

All sera were tested according to the procedures described by the cassette. One free fall drop of the serum was added into test wells and 2 drops of buffer then it was incubated for 10 minutes. One colored line appears in the control line region and non-appearance of a visible line in the test line region indicates HSV negative result.

III. DATA ANALYSIS

Data were analyzed by computer system using statistical package for social science (spss).

Ethical Consideration

Permission from hospital was applied and verbal consent was taken from participants and was only be used for research purposes.

IV. RESULTS

Overall prevalence of HSV-2 IgM antibodies in pregnant women attending Mayer Ali Abdall-fattah Hospital was 0% and all 80 women serum samples studied were showed a negative result (Table1).

The statistical analysis showed that 58(72.5%) of this study group were pregnant women less than 30 years age and the rest 22 (27.5%) were aged more than 30 years old (Table 2). The result also demonstrates that only 9 (11.25%) of this study group have a history of abortion. However, 71 (88.75%) participants have no history of miscarriage (Table 3). Additionally, 28 (35%) of our study population were in first trimester of pregnancy at time of study while 25 (31.25%) and 27 (33.75%) of this study group were in second and third trimester respectively. The result of blood group frequencies for the pregnant women

those participated in our study was revealed that O+ve was the most popular blood group with percentage of 37.5% followed by A+ve, AB+ve, B+ve, O-ve, A-ve, with percentage of 30%, 11.25%, 10%, 5% and 3.75% respectively. However, the

least blood group detected in pregnant women were AB-ve and B-ve with percentage of 1.25% for both (Table 5). Only 16% of pregnant women in this study have a vaginal discharge in their clinical history (Figure 1).

Table 1: Result of HSV-2 ICT test among pregnant women

Elements	Positive	Negative	Total	Percent
Ani-HSV IgM	0	80	80	0%

Table 2: Distribution of the study population according to age group

Elements	Frequency	Percent
Less than 30	58	72.5%
More than 30	22	27.5%
Total	80	100.0%

Table 3: Distribution of the study population according to history of abortion

Elements	Frequency	Percent
Abortion	9	11.25%
No abortion	71	88.75%
Total	80	100.0%

Table 4: Distribution of the study population according to trimester

Elements	Frequency	Percent
First	28	35%
Second	25	31.25%
Third	27	33.75%
Total	80	100.0%

Table 5: Distribution of the study population according to blood group

Elements	Frequency	Percent
O+ve	30	37.5%
O-ve	4	5%
AB+ve	9	11.25%
AB-ve	1	1.25%
A+ve	24	30%
A-ve	3	3.75%
B+ve	8	10%
B-ve	1	1.25%
Total	80	100.0%

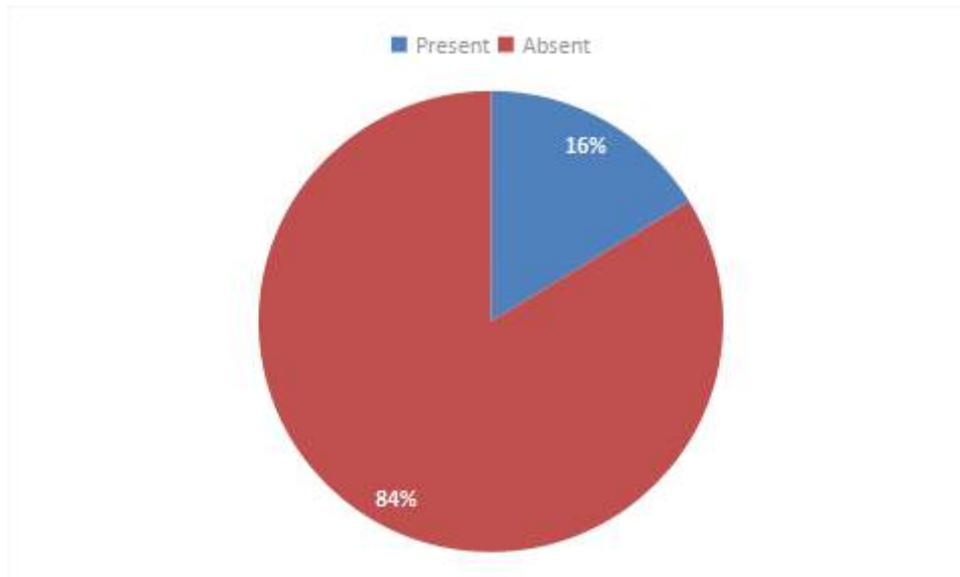


Figure 1: Distribution of the study population according to present of vaginal discharge

V. DISCUSSION

Herpes simplex virus is one of TORCH infections group (Toxoplasma gondii, Rubella, Cytomegalovirus, Herpes simplex). It is a worldwide obstetrical problem, where transplacental transmission of the infection may result in serious congenital diseases the importance of this study is due to the importance of herpes simplex viruses because they are responsible for a spectrum of diseases ranging from gingivostomatitis to keratoconjunctivitis encephalitis, genital diseases and, it is known to be one of the causes of spontaneous abortion.

The result of ICT for IgM was negative for all eighty studied women, this indicate to low prevalence of HSV-2 among pregnant women at Martyr Ali Abdelfattah Hospital, but we cannot confirm the absence of HSV-2 by this study due to small sample size which need confirmatory study with inclusion of large study population. Our study agreed with that of El-Amin *et al.*, 2013 in Sudan which done in National Ribat teaching hospital they examined three hundred and fifty-six women delivered during the period of the study for HSV-2 IgM and IgG and they found that forty-five women (34.6%) tested positive for the IgG of herpes viruses but no one of them test positive for IgM test by ELISA (9). However, our study was disagreed with that of Hadeel *et al.*, 2015 in Sudan whom found that the prevalence of

HSV-2 IgM antibodies among 90 pregnant women was 2 (2%) (10). Also, our result was disagreed with Alaa *et al* study in Sudan in 2018 whom demonstrate that the prevalence of HSV-2 IgM antibodies among 90 pregnant women was 7 (7.7%) of which only 6 were confirmed by molecular study (11). In addition, our result was also disagreed with Indian study conducted by Biswas *et al* in 2011 which conducted in five northeastern states to understand the epidemiology and role of risk factor associated with HSV seroprevalence with an aim focused toward prevention and they found that overall HSV seroprevalence was 8.7% (142/1640). The disagreement between our result and other findings may be due to usage of more advance technology with more sensitivity rate like ELISA and PCR in other test compared to ICT in our study. In addition, lacking of funding lead us to include only small sample size, on the other hand we find some other studies include more sample size.

VI. CONCLUSION

All the pregnant women in this study are negative for HSV IgM by ICT, most women are on intermediate level of education and most women were at first trimester. Some symptoms of HSV are found on some of pregnant women but there no positive result.

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