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Research Paper

Study the Effect of *Herpes Simplex-1* Viruses and *Rubella* Viruses in Infected Pregnant Women at Al Najaf Governorate

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ABSTRACT	Manuscript Info.
<p>From October 2023 to March 2024, a total of (50) clinical specimens were taken from infected pregnant women. The women visited AL-Sadder Medical City and AL-Zahra General Hospital during the study time and provided these specimens. All samples were tested with the TORCH test and the results were recorded. Among a sample of 50 patients, an equal number of 25 (50%) were identified as IgM positive for <i>Rubella</i> virus and IgG positive for Herpes Simplex -1 viruses, while 25 (50%) as IgG positive for Herpes Simplex -1 viruses with a negative result for Rubella virus.</p> <p>The findings of the study indicate that 25 of the women with IgM positive for Rubella virus and IgG positive for Herpes Simplex-1 viruses are more susceptible to preeclampsia and miscarriage, whereas the 25 women with IgG positive for Herpes Simplex -1 viruses with negative results for Rubella virus are healthier pregnancy without any symptoms of miscarriage or preeclampsia.</p>	<ul style="list-style-type: none"> ✓ ISSN No: 2584-184X ✓ Received: 25-08-2024 ✓ Accepted: 11-11-2024 ✓ Published: 17-11-2024 ✓ MRR:2(11):2024;30-34 ✓ ©2024, All Rights Reserved. ✓ Peer Review Process: Yes ✓ Plagiarism Checked: Yes
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KEYWORDS: School Fagat Hansi Mission, Enrolment Rate, Academic Performance, Infrastructure Development.

1. INTRODUCTION

So basically, the *Rubella virus* is a type of virus that infection occurs in a pregnant woman, the fetus may become infected transplacentally, which can result in miscarriages, severe fetal abnormalities or deformities, and other serious symptoms such as encephalopathy and thrombocytopenia, collectively referred to as rubella congenital syndrome [3]. The diagnosis of rubella is mostly dependent on the presence of antibodies. While anti-Rubella IgG seropositivity shows a previous exposure or immunization, IgM seropositivity indicates an

acute or recent exposure to rubella infection (or reinfection) during pregnancy [3].

Rubella vaccination campaigns have been implemented in many developed countries, and as a result, the incidence rate of the infection has significantly dropped [4]. However, in many developing countries, the vaccine has not been included in national immunization programs; thus, rubella has become one of the most prevalent infectious diseases and pandemics in these countries. The rubella vaccination is currently fairly

priced and has great rates of protective effectiveness. It appears that the introduction of the rubella vaccination has not received enough support from the governments of developing countries. The human herpes simplex virus (HSV) is a member of the Herpesviridae family of DNA viruses, which is further subdivided into HSV-1 and HSV-2. HSV-1 is usually connected with oral herpes, while HSV-2 is linked to genital herpes. However, during the past few decades, the etiology of the virus has undergone a significant shift, with HSV-1 being associated with around 30% of cases of genital herpes and vice versa [1,2,3]. HSV is notably one of the main viruses that make up the TORCH (Toxoplasma, Rubella, Cytomegalovirus, Herpes) group of viruses that are recognized to have the ability to cause congenital infections during pregnancy. This evolving understanding highlights the dynamic nature of HSV infections and highlights the need for additional research to elucidate the herpes simplex virus epidemiology.

Primary herpes simplex infection usually manifests as symptoms in 10-15% of instances during childhood, with the majority of infections being either subclinical or asymptomatic. The virus establishes latency in the sensory nerve ganglia after the initial infection [1]. Numerous external (exogenous) and internal (endogenous) variables can reactivate the latent virus, which could result in viral replication and the possible emergence of clinical illness. This process of reactivation highlights the dynamic character of herpes simplex virus infections, in which triggers can break latency periods, leading to recurring bouts of disease symptoms [2]. To control and prevent the clinical signs of herpes simplex virus infections, it is essential to comprehend the factors that influence viral reactivation.

2-MATERIALS & METHODS

Specimens Collection

Clinical samples from (50) patients with recurrent miscarriages were obtained between (October 2023) and March 2024) During the pregnancy, these samples were collected from patients at visited AL-Sadder Medical City and AL-Zahra General Hospital. All blood samples were centrifuged, then the serum and prepared for the TORCH test.

Identification of infection

Using a sterile medical syringe, 5 milliliters of venous blood were drawn. The blood was then transferred to a test tube devoid of any clotting-blocking material, and allowed to stand at room temperature for 30 minutes. To aid in coagulation, the blood was centrifuged for 5 minutes at an average speed of 3000 revolutions per minute, Afterwards, a sterile micropipette was used to remove the serum that had been isolated from the other blood components. Anti-Herpes simplex virus and anti-Rubella specific levels were determined using the TORCH test method, which is employed for the qualitative detection of IgG/IgM antibodies to (Toxoplasma (TOX), Rubella virus (RV), Cytomegalovirus (CMV), Herpes simplex virus (HSV)) in women sample.

Serological Diagnosis of Rubella virus and Herpes simplex virus qualitatively by using TORCH test panel for (IgG/IgM)

The specific level of anti-Rubella and anti-Herpes simplex virus was measured, IgG and IgM (in sera of patients and control group by TORCH test method, which is used for the qualitative detection of IgG/IgM antibodies to (Toxoplasma (TOX), Rubella virus (RV), Cytomegalovirus (CMV), Herpes simplex virus (HSV)) in both women sample (healthy and aborted) serum. The test was performed in sterile settings inside AL-Sadder Medical City and AL-Zahra General Hospital using the methodology described and a test kit from the USA manufacturer (Sure Bio-Tech). Each kit has five wells (one well for each virus). Three full drops of serum (80–100 µl) were added vertically into each panel sample well during the test. Care was taken to avoid creating air bubbles on the pipette since this could prevent the sample from being transferred fully and invalidate the results. Even when the same sample was used, each test was carried out with a different pipette. The results were visible within 15 to 30 minutes, and distinct colored lines appeared; one line belonged in the control region (C), one line in the (T1) region if the sample was (IgG +), one line in the (T2) region if the sample was (IgM+), or both. and after 35 minutes, the outcome is deemed illegitimate.

3. RESULTS & DISCUSSIONS

Presence of Toxoplasma, Rubella, HCMV, Hsv-1, and Hsv-2 specific immunoglobulins (IgG and IgM) in the serum of the study groups

The TORCH test was used to perform a serological examination for specific immunoglobulins (IgG, IgM) to diagnose Rubella, HSV, and other types of viruses. The results are shown in Table 3-1, which shows that all age groups of infected women were seropositive for IgG anti-HSV with a percentage of 100%, while IgG anti-Rubella was present in 0% of the infected women as in Figure 1. This suggests that the women who performed the abortions had a history of HSV infection, as evidenced by the presence of IgG, which is formed during the first week of infection and lasts a lifetime, as opposed to IgM, which is thought to indicate a more recent infection [4]. Additionally, due to the virus's epidemiological nature and multiple modes of transmission, HSV is endemic in Iraq and common among the general public, pregnant women in particular, and those living in substandard conditions. The virus's widespread transmission is also attributed to a lack of health awareness, high rates of environmental pollution, and the detrimental effects these factors reflect. These findings were corroborated by a study by al Cannon [5], which demonstrated that the conditions of poverty, overcrowding, and poor hygiene increase the virus's spread rates.



Fig. 1: The results of TORCH test

Furthermore, according to the Bushara 2015 study conducted in Khartoum [6], all healthy and aborted women tested positive for IgG and negative for IgM. These findings were consistent with the findings of the AL-Jurani [7] study conducted in Iraq, which reported that the seroprevalence rates of IgM and IgG anti-HSV among aborted women were 0% and 50%, respectively. This study's findings indicate that although Rubella typically causes mild rash fever disease when acquired in childhood, if the infection happens during the first trimester of gestation and results in fetal death, it also accumulates in women who have aborted in most age groups, even in the control group where it was seropositive for IgM with a percentage of 50%, Congenital Rubella Syndrome

(CRS) is a pattern of birth malformations or stillbirth that affects infants [8]. Rubella is also linked to a variety of fetal abnormalities and can infect the placenta, increasing the chance of stillbirth [9]. Thus, this result was consistent with data from [10] in Iraq, which showed that anti-IgM virus spread among aborted women at a rate of 40%. Similarly, [11] demonstrated a higher rate of chronic infection by anti-IgM virus among aborted women, with a percentage of 58%, than acute infection by anti-IgM virus; these data also aligned with findings from the study of Saad and Idan [12]. The TORCH test also showed that the parasite *Toxoplasma gondii* does not accumulate in women who have aborted in any age group, even in control as shown in Figure (2).



Fig. 2: The TORCH test for toxoplasma gondii parasite

This finding may be explained by the fact that infection prevalence varies throughout the world and even within a single city, or it may be because the climate of the tropics differs naturally, which helps the parasite's oocytes survive. Either way, these facts raise the risk of infection for women who live in polluted environments. [13]. Toxoplasmosis is

spread by contaminated water, food, placenta, and breastfeeding; nevertheless, the low incidence of this disease is the reverse of what some believe to be the primary cause of repeated miscarriages. 60–70% of females, However, if it impacts expectant mothers during the first trimester of pregnancy, it may result in congenital abnormalities or

miscarriage during the latter trimester [14]. In our community, however, this outcome may be linked to a lack of exposure to cats. The findings align with the findings of Hassan [15], which reported a 46% toxoplasmosis percentage. They also support the findings of Elamin [16], which reported a 7.20% toxoplasmosis incidence percentage. Other studies have reported lower infection incidence rates, such as those by Nash [17] and Hammadi [19] in Karbala, which reported an 11.3% infection incidence rate. Furthermore, the current study finds no difference in the virus's spread between first-time and multiple-time abortions; therefore, the proportion explains the

widespread virus spread and the majority of aborted women had an old HSV infection, as evidenced by the IgG produced during the first week of infection and lasts a lifetime, while the presence of IgM is thought to indicate recent infection or re-infection with a new strain of the virus, as it lasts for a limited period, typically between three and four months after the infection occurred. These results are consistent with a previous study by Mahmood and Adeeba [20], that revealed the majority of miscarriages occurred during the first to second trimester of pregnancy.

Table 1.1: Previous TORCH infection in aborted women and control group.

Characteristics		Study (No. = 50)		Control (No. = 15)		Chi test	P value (Sig.)	
		Freq.	%	Freq.	%			
Number of Abortion	0	0	0.00	15	100	79.00	0.00	
	1-2	15	70.3	0	0.00			
	3-4	15	23.4	0	0.00			
	5-6	20	6.3	0	0.00			
Previous Infections	Toxo. P	IgG +	0	0.0	0	0.0	-	-
		IgG -	50	100.0	0	0.0	-	-
	Rubella	IgG+	0	40.0	7	46.6	0.22	0.63
		IgM	25	60.0	8	53.4		
	CMV	IgG +	0	0.0	0	0.0	-	-
		IgG -	0	0.0	0	0.0		
	hsv-1	IgG +	25	95.4	15	100	0.72	0.39 NS
		IgM +	0	0	0	0.0		

Additionally, the table demonstrates that the control group has never had a CMV or toxoplasmosis infection.

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