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RESEARCH ARTICLE

SEROPREVALENCE OF HERPES SIMPLEX VIRUS TYPE- 1 PRE- MARITAL WOMEN IN AL-KHALIS CITY

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ABSTRACT

Background: Herpes simplex virus type 1 (HSV-1) infection is a common viral illness, which classically causes oro-labial herpes (cold sores), becuase the virus are transmitted by contact with an infected area of the skin during re-activations of the virus

Objective: To determined the seropositivity and determinants of serum IgG &IgM antibody against HSV-1 among pre –marital women in khalis city.

Materials and Methods: Ninety one pre-Marital women were chosen from those attending the akhalis hospital in Khalis city - Diyala province, during the period from 1st December /2014 till 30_{th} February 2015. The age range between (15-45) years. Anti- herpes simplex virus type 1 IgM and IgG antibodies were assayed by Enzyme linked immunosorbant assay technique. (ELISA) The result showed that 78 (85.7%) women had the antibody immunoglobulin (IgG), and nine (9.89%) women had IgM. The highest ratio of semple herpes virus type one for IgG and IgM were found in the age group 15-20 years. The results revealed that the highest titer of SHV1- IgG from rural areas (14.28) and 50(89.28) for IgM. Most of SHV1- IgM had medium eductional (95) and showed significant result to education

Conclusion: Low prevalence rate of HSV-1 seropositivity was appeared among pre-Maritalwomen in studies area. However, it's necessary to focus on the women that demonstrated susceptibility for herpes simplex virus type 1 infection.

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INTRODUCTION

Herpes simplex virus 1 (HSV-1) also known as human herpesvirus 1 (HHV1), which affects, HSV-1one members of the herpesvirus family, Herpesviridae, that infect humans (Ryan *et al*., 2004). HSV-1found across all age groups HSV-1 produces most cold sores were ubiquitous and contagious. HSV-1 like herpes simplex virus 2 (HSV-2) following primary infection, the viruses establish lifelong latent infection and are transmitted by close contact, both sexual including contact with saliva, such as kissing and mouth-to-genital contact (oral sex) and nonsexual and are transmitted by contact with an infected area of the skin during re-activations of the virus (Jen-Hsiang *et al.,* 2007; Schiffer *et al.,* 2014). HSV-1 is often acquired orally during childhood. It may also be sexually transmitted, (Koelle *et al.,* 2008; Corey *et al.,* 2009).

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Transmission of HSV-1 from infected women to neonates may result in severe neurologic illness, disseminated disease, or death in the newborns (Brown *et al.,* 1997; Langenberg *et al.,* 1999; Anne Scoular *et al*., 2002; Corey *et al.,* 2009). Symptoms of herpes simplex virus infection include watery blisters in the skin or mucous membranes of the mouth, lips. (Ryan *et al*., 2004) tongue, faceand/or pharynx, herpes gingivostomatitis. Lesions heal with a scab characteristic of herpetic disease. Sometimes, the viruses cause very mild or atypical symptoms during outbreaks (3) Herpes viruses establish lifelong infections, and the virus cannot yet be eradicated from the body (Kimberlin *et al*., 2011). Moreover, HSV-1 ocular infection was believed to be one of the most common causes of corneal blindness in the developed countries (Farooq *et al.,* 2012). The protective immune response against the HSV infection might involve virus-specific cytotoxic T cells and humoral immunity (Nash *et al.,* 1985). The genomes of HSV-1 was complex (McGeoch *et al.,* 2006), like all of herpes viruses that had common properties, which were included large double-stranded, linear DNA genome encased within an icosahedral protein called the

capsid, that was wrapped in a lipid bilayer called the envelope (Mettenleiter *et al*., 2006). The Herpes simplex one genomes can be classified into six clades (Bowden *et al*., 2006). Four of these occur in East Africa with one clade in East Asian and another in Europe/North America. This suggests that this virus may have originated in East Africa. The most recent common ancestor of the Eurasian strains appears to have evolved 60,000 years ago (hussain *et al*., 2013). Worldwide, the incidence and prevalence of HSV-1 infections are increasing yearly (silent epidemic). Currently 5 to 30% of primary HSV in U.S cases were caused by HSV-1 (Aurelian, 1992) which mean there is more than 45 million people currently infected with HSV, with <1 million cases diagnosed yearly (Whitley, 2001; Uusküla *et al.*, 2004; Alanen *et al*.,2005).Treatment of this virus usually involves general-purpose antiviral drugs that interfere with viral replication, reduce the physical severity of outbreak-associated lesions, and lower the chance of transmission to others. Studies showed patient populations have indicated daily used of antivirals such as acyclovir (Kimberlin *et al*., 2011).

MATERIALS AND METHODS

Sera were collected in virology department of khalis city ,and specimen selected from women whose coming for analysis their blood before marriage, as across section study including 91 patients attending hospital during the period between 1 Julay 2014 to 30 of February 2015. The demographic information include age, address and education level were obtainig from women by qusteinare.

Serologic studies: In order to determine the herpes virus serological, 5 ml of venous blood were collected from 91 women who wanted to get married and then the blood was separated by centrifugation, obtien serum and stored at (-35C°) until using Enzyme-Linked Immunosorbant Assay (ELISA; Human, Germany) for detect anti-HSV1- IgG and IgM.

Statistical analysis: was done by using SPSS (Statistical Package of social Science) version 18 computer software. Frequency distribution and percentage for selected variable were done. The correlation test was used and level (<0.01) was considered significant (Nisi, 2004).

RESULTS AND DISCUSSION

Using the ELISA test for detection the anti-semple herpes1virus IgM and IgG in serum of women before married, The women' ages ranged from 15-45 years , therty nine(42.9%) of women in the age group 20-25 years,33(36%) in age group 15-20,11(12%) in age group 25-30, 4(4.4) in age group 30-35, 3 (3.3) in age group 35-40, while 1(1.1) in age group 40-45, (Table 1). This result was in agree with study in Port Harcourt, Nigeria that showed 40.6% of women in the age groups 26 - 30 (Iheanyi *et al*., 2015), and in studyin China, Czech Republic, Bulgaria and Romania (Lin *et al.,* 2011), (Arama *et al.*, 2010), (Pebody *et al.,* 2004), and around 50% in those aged 30–39 years in Japan (Doi *et al.,* 2009). In this study results showed that 78(85.71 %) of specimens, were positive for IgG and 9 (9.89%) were positive for IgM respectively and 13(14, 28 %) were negative for IgG, 82 (90.1%), negative for IgM respectively. Table (2). This study was agreement with study showed that (90.5%) have detectable levels of HSV-1 IgG antibodies, (Alzahrani *et al*., 2005) and agree with seroepidemiology studies have shown that (>80%) of HSV-1 IgG antibodies among the normal population. This study not agreement with study showed HSV1 was high ranging between

Table 1. Distribution of patients according to age

Age	Frequency	%
15-20	33	36.3
20-25	39	42.9
25-30	11	12.1
30-35	4	4.4
35-40	3	3.3
40-45	1	1.1
Total	91	100.0

Table 2. Results of ELISA test for detection of IgM and IgG antibodies to Herpes Simplex Virus in women before married

Results		Frequency (%) of IgM for HSV	Frequency (%) of IgG for HSV
Women before married N= 91	Positive	9 (9.89%)	78 (85.71%)
	Negative	82 (90.1%)	13 (14.28%)
	Total	91(100%)	91(100%)

Table 3. HSV infection among the different age groups of women before married specimens by IgG&IgM

Age groups (years)	Result of IgM (HSV)		Result of IgG (HSV)		Total
	No. positive (%)	No. negative (%)	No. positive (%)	No.negative (%)	
≥ 15 - ≤ 20	5 (5.49)	28 (30.76)	25 (27.)	7 (7.69)	33
>20 - ≤ 25	3 (3.29)	36 (39.56)	35 (38.46)	4 (4.39)	39
>25 - ≤ 30	0 (0.00)	11 (12.08)	10 (10.9)	1 (1.09)	11
>30 - ≤ 35	1 (1.09)	3 (3.29)	4 (4.39)	0 (0.00)	4
>35 - ≤ 40	0 (0.00)	3(3.29)	3(3.29)	0 (0.00)	3
>40 - ≤ 45	0 (0.00)	1(1.09)	1 (1.09)	0 (0.00)	1
Total	9	82	78	13	91

Table 4. Distribution of HSV (IgM and IgG) results according to residence

Residence	Result of IgM (HSV)		Result of IgG (HSV)		Total
	No. positive (%)	No. negative (%)	No. positive (%)	No. negative (%)	
Urban	1 (1.09)	34 (37.36)	28 (30.76)	7 (21.97)	35
Rural	8 (8.79)	48 (52.47)	50 (54.94)	6 (6.59)	56
Total	9	82	78	13	91
Correlation	NS*		NS*		

NS*:No signfecant resuls

Table 5. Distribution of HSV (IgM and IgG) results according to level of education

Level of Education	Result of IgM (HSV)		Result of IgG (HSV)		Total
	No. positive (%)	No. negative (%)	No. positive (%)	No. negative (%)	
Illitrated	4 (4.39)	2 (2.19)	6 (6.59)	0 (0.00)	6
Primary school	3 (3.29)	18 (19. 78)	20 (21.97)	1 (1.09)	21
Medium school	1 (1.09)	22 (24.17)	22 (24.17)	1 (1.09)	23
Secondary school	1 (1.09)	20 (21.97)	18 (19.78)	3(3.29)	21
College	0 (0.00)	20(21.97)	14 (15.38)	6 (6.59)	20
Total	9	82	78	13	91
Correlation	Sig*		Sig*		

Sig.* : significant resuls

91 and 93% HSV-1 IgM antibodies (Bella ohana *et al*., 2000) Results in table (3) revealed that rate detection of HSV-1 by ELISA IgM and IgG tests was highest in the age group (≥ 15 - ≤ 20) years for IgM, and (≥ 20 - ≤ 25) years for IgG as compared to ather age groups. This result in agreement with study showed that thirty sevene (100%) of women was in age group 26-30 positive to HSV1- IgG (Iheany *et al.*, 2015). And in agreement with study showed rise of HSV1- IgG seropositive rate had been noted late adolescent stage, from 53% at the 14–16 age group to over 90% at the 40–49 age group (Jen –Hsing *et al*., 2007). This result was agreemnt with study revealed that (76%) in age group 21–30 has positive result to HSV-1 IgM patients and have significant higher prevalence ($p < 0.05$) (Dharmishtha *et al*., 2012). The results showed that HSV -1 IgM and IgG was highest among women reside in rural areas 8 (14.28%), 50 (89.28%) respectively in compared with those residus in urban areas 1 (2.85%), 28 (80 %) respectively, with no significant showed between residence and IgM&IgG, Table (4). This result was agreement with study done in tywan showed that most of HSV-1 IgG seropositvity in the rural residence ratio 12.82 (95%) (Jen-Hsiang *et al.,* 2007), and agreement with research in Iran showed that patients who lived in villages (70.6%) was more than single (33.7%) persons that lived in city (60.5%) (Rezaei-Chaparpordi *et al*., 2012). Regarding the level of education, the results showed the detection rate of antibody HSV IgG and IgM were higher in mediated eduction 22 (24.17%)in both of IgG, IgM in compared to other levels of education, with significant result to education level under level (0.01) for IgG & IgM, Table (5). This result was not agree with study of Obeid E in (2007) showed (93.2%) of antibody IgG was found in those women who illiterate or could read and write only with significant result to HSV-1 IgG and27 (5.9%) for HSV-1 IgM antibodies with no significant difference between HSV-1 IgM sociodemographic variables. and in agreement with study in Port Harcourt, Nigieria showed that One hundred percent (100%) of women having primary, secondary and post-secondary education to HSV-1IgG antibody (Iheanyi *et al*., 2015).

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