

STUDY OF TORCH OUTCOME ON PREGNANCY AND FETUS IN WOMEN WITH BOD IN DUHOK PROVINCE – KURDISTAN REGION - IRAQ

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Abstract:

This study included the distribution of TORCH (*T. gondii*, Rubella, CMV, and HSV- 2) infections among 276 pregnant women of different ages (18 – 45 years), 184 with Bad Obstetric History (BOH) and 92 with normal obstetric history. All cases were examined serologically by ELISA for the detection of IgG and IgM antibodies against TORCH pathogens.

The seropositivity of TORCH infections was significantly higher in women with BOH than those of normal pregnant women with previous normal full term deliveries. As out of 184 pregnant women with BOH, the seropositivity for anti IgG and IgM for *T. gondii*, CMV, Rubella and HSV-2 were 66 (35.9%) and 6 (3.3%), 159 (86.4%) and 29 (15.8%), 108 (58.7%) and 3 (1.6%) and 104 (56.5%) and 20 (10.9%), respectively.

Out of 92 examined normal pregnant women, the seropositivity for anti IgG and IgM for *T. gondii*, CMV, Rubella and HSV-2 were 38 (41.3%) and one case (1.1%), 79 (85.9%) and 5 (5.4%), 43 (46.7%), 1 (1.1%), and 48 (52.2%) and 4 (4.3%), respectively.

Regarding age, young ages (25-31 years) showed higher rates of seropositivity, for *T.gondii*, CMV and HSV-2 which was 57.1% (105/184) than older ages (39-45 years) in which it was only 1.1% (2/184). except Rubella which showed high seropositivity among all ages. Regarding occupation, housewives showed higher seropositivity (74.3%) than employed women (40.2%).

With respect to period of gestation, for all agents high infection rates (45.7%) occurred during the first trimester of pregnancy and the lowest (12.5%) was recorded in third trimester stages.

Keywords: TORCH, BOD, age, occupation, literacy

Introduction

The TORCH complex (also known as STORCH, TORCHES or the TORCH infections) is a medical acronym for a set of primary or prenatal infections (i.e. infections that are passed from a pregnant woman to her fetus), the TORCH infections can lead to severe fetal anomalies or even fetal loss (Newton, 1999).

They are a group of viral, bacterial, and protozoan infections that gain access to the fetal bloodstream transplacentally via the chorionic villi (Lewis, 2007). The abbreviations of TORCH are:

T – Toxoplasmosis / *Toxoplasma. gondii*

O – Other infections such as Syphilis, Hepatitis B, Varicella- zoster virus.

R – Rubella

C – Cytomegalovirus

H – Herpes Simplex virus type 2

Although the four diseases are not particularly serious for adults who are exposed and treated, women who are infected with any of these diseases during pregnancy are at risk for miscarriage, still birth, or for a child with serious

birth defects and /or illness. Thus, TORCH test is performed before or as soon as pregnancy is diagnosed to determine the mother's history of exposure to these microorganisms (Gomella, 1994).

Bad obstetric history (BOH) implies previous unfavorable fetal outcome in terms of two or more consecutive spontaneous miscarriage, history of intrauterine fetal death, intrauterine growth retardation, stillbirth, early neonatal death and/or congenital anomalies. The cause of BOH may be genetic, hormonal, abnormal maternal immune response, and maternal infection (Morton *et al.*, 1987).

The prevalence of these infections varies from one geographical area to another (Stern *et al.*, 1996). These maternal infections are initially unapparent or asymptomatic and are, thus, difficult to diagnose on clinical aspects (Abdel-Fattah *et al.*, 2005).

Therefore, diagnosis of acute TORCH infection in pregnant women is usually established by demonstration of seropositivity of specific immunoglobulins (IgM and IgG) in sera (Abbas, 2002). Enzyme-Linked Immuno Sorbent Assay (ELISA) for IgM antibodies against these

infections is highly sensitive and specific (Mladina *et al.*, 2002). The conventional single serum assays do not make a clear distinction between a recent primary and chronic infection, the tendency of specific IgM to persist for a long time even at high levels has been verified in several studies (Denkers and Gazzinelli ,1998, Frey,1999).

Thus, if IgM antibodies are present in the serum of a pregnant woman, a recent infection with the organism has occurred, but if IgG antibodies are present and do not demonstrate an increase on serial testing several weeks later, it can be assumed that the person has had a previous infection by the organisms (Marzi *et al.*, 1996). If the serum of a person has no evidence of either IgM or IgG antibodies specific for the organisms, then the person is at risk of infection if exposed because they do not have any demonstrable immunity (Shirahata *et al.*, 1992).

The current study was undertaken to screen two groups of pregnant women (group of pregnant women with bad obstetric history and second group of normal woman with previous normal full term deliveries) serologically for IgG

and IgM antibodies against TORCH infections using ELISA.

Materials and Methods

During the period from September to November 2012, a total of 276 of pregnant women at ages from 18 to 45 years were enrolled in this study.

The studied women were divided into 2 groups as shown in table(1). the first group included 184 women who attended the antenatal clinic, obstetrics and gynecology department of Azadi Teaching Hospital in Duhok Governorate, the General Amedia Hospital and antenatal clinic in Sheladieza, Deroluak, Sersaing and Kadash with bad obstetrics history (BOH) and the second group (normal group) included 92 women with previous normal pregnancies and full term deliveries. The data were collected using special questionnaire including age, residence (urban or rural and semi urban), educational status, occupation, number of pregnancies, previous miscarriage, history of fetal abnormalities, and stage of pregnancy.

Table 1: Distribution of characteristics among total examined pregnant women (n=276)

Characteristics	Number	%	
Examined groups	Abnormal pregnancy	184	66.7
	Normal pregnancy	92	33.3
Environment(Residency)	Rural	27	9.8
	Semiurban	85	30.8
	Urban	164	59.4
Occupation	Employer	111	40.2
	Housewife	165	59.8
Education	Educated	205	74.3
	Illiterate	71	25.7
Attending Health care facilities	Duhok	143	51.8
	Amedi	133	48.2
Age groups	18-24 Years	75	27.2
	25 -31 Years	155	56.2
	32 -38 Years	44	15.9
	39 -45 Years	2	0.7

2. Blood Collection

From each woman of BOH group and normal group, 5 ml of blood sample was withdrawn and the serum was separated for the detection of IgM and IgG antibodies for TORCH infection. The blood was taken by a disposable syringe, transferred to disposable test tube and allowed to clot, then centrifuged at 3000 rpm for about 5 minutes, the separated serum was aspirated and poured into a sterile eppendorf tube (1ml) . Each tube was labeled and numbered before being stored in a deep freezer at -20 °C until the time of analysis. Blood samples collected from distant areas were kept in a cool box until reaching the laboratory. The present work was performed in the laboratory of serology and virology department / General Amedi Hospital.

All serum samples were screened for the presence of IgM and IgG antibodies for *T.gondii*, Rubella virus, Cytomegalovirus (CMV) and Herpes simplex virus type 2(HSV-2) using Enzyme Linked Immuno Sorbent Assay (ELISA). All ELISA kits were obtained from BioCheck, Inc./ (Germany). The procedure was performed according to the manufacturer instructions of the company.

The results were statistically analyzed using SPSS software (16 version) the Chi-square test and Fisher's exact test used to compare proportions and *t* test for comparison between the means of two groups, a *p* value of < 0.05 considered significant.

Results

Table (2) shows the seropositivity of TORCH infections among examined pregnant women with BOH and normal pregnant women.

From 184 pregnant women with BOH 66 (35.9%) were positive for anti *T.gondii* IgG and 6 (3.3%) were positive for anti *T.gondii* IgM.

Regarding CMV infection, 159 (86.4%) were positive for anti CMV IgG and 29 (15.8%), were positive for anti CMV IgM. It was obvious from table (2) that 108 (58.7%) and 3 (1.6%) were positive for anti Rubella IgG and IgM respectively. The IgG and IgM levels against HSV-2 were 104 (56.5%) and 20 (10.9%) respectively.

Out of 92 examined normal pregnant women, 38 (41.3%) were positive for anti *T.gondii* IgG and only one case (1.1%) was positive for anti *T.gondii* IgM. The results show that 79 (85.9%) and 5 (5.4%) were serologically positive against anti CMV IgG, IgM, respectively. The seropositivity of anti Rubella IgG were 43 (46.7%) and IgM was 1 (1.1%) among normal group. Regarding HSV-2 infections, 48 (52.2%) were positive for IgG and 4 (4.3%) were positive for IgM. The results were statistically highly significant ($P < 0.01$) for CMV IgM and significant ($P < 0.05$) for Rubella IgG, and for HSV-2 IgM when compared with other agents of TORCH infections.

Table 2: Seropositivity of TORCH infections among pregnant women with BOH and normal group (n=276)

TORCH	Type of immunoglobulin	Women groups				Statistics			
		BOH group (n=184)		Normal group (n=92)		Test (value)	df	P value	Sig.
			%		%				
<i>Toxoplasma</i>	IgG	66	35.9	38	41.3	Chi-Square (0.771)	1	0.380	
	IgM	6	3.3	1	1.1	Fisher's exact		0.430	
CMV	IgG	159	86.4	79	85.9	Chi square (0.01526)	1	0.4508	
	IgM	29	15.8	5	5.4	Chi square (6.055)	1	0.00694	
<i>Rubella</i>	IgG	108	58.7	43	46.7	Chi square (3.539)	1	0.02998	
	IgM	3	1.6	1	1.1	Fisher's exact		1.000	
HSV -2	IgG	104	56.5	48	52.2	Chi square (0.468)	1	0.2468	
	IgM	20	10.9	4	4.3	Chi square (3.286)	1	0.03495	

*CMV IgM = highly significant ($p < 0.01$)

*Rubella IgG = significant ($p < 0.05$)

*HSV-2 IgM = significant ($p < 0.05$)

The results of TORCH infections among various age groups of women with BOH were presented in table (3). It is clear that most of the cases 57.1% (105/184) were among the ages from 25-31 years, while the lowest cases were 1.1% (2/184) among the age group 39-45 years. Furthermore, it was found that the seropositivity of IgG against *T. gondii*, CMV, and HSV-2 were 19 (41.3%), 42 (91.3%) and 30 (65.2%), respectively, and they were more common among the ages from 18-24 years except Rubella infection which was high in all age groups.

The results indicated that the seropositivity of anti CMV IgG was high 28 (90.3%) in the age group of 32-38 years followed by 87 (82.9%) in age group of 25-31 years. Regarding IgM of *T. gondii*, CMV, Rubella and HSV-2 were high in 18-24 years group when compared with other age groups. It was reported as 5 (10.9%), 9 (19.6%), 1 (2.2%) and 7 (15.2%), respectively. The results of *T. gondii* IgM were statistically significant ($P < 0.05$) when compared with other agents of TORCH infections.

Table 3: Seropositivity of TORCH infections among abnormal group (BOH) related to age groups (n=184)

TORCH	Type of immunoglobulin	Age groups / Year					Statistics			
		18-24	25-31	32-38	39-45	Test	df	P value	Sig.	
		n=46 %	n=105 %	n=31 %	n=2 %					
Toxoplasma gondii										
IgG	19	41.3	39	37.1	7	22.6	1	50.0	Fisher's Exact Test	0.301
IgM	5	10.9	1	1.0	0	0.0	0	0.0	Fisher's Exact Test	0.016
Cytomegalovirus										
IgG	42	91.3	87	82.9	28	90.3	2	100.0	Fisher's Exact Test	0.510
IgM	9	19.6	17	16.2	3	9.7	0	0.0	Fisher's Exact Test	0.693
Rubella virus										
IgG	27	58.7	62	59.0	18	58.1	1	50.0	Fisher's Exact Test	1.000
IgM	1	2.2	2	1.9	0	0.0	0	0.0	Fisher's Exact Test	1.000
Herpes simplex-2										
IgG	30	65.2	59	56.2	13	41.9	2	100.0	Fisher's Exact Test	0.129
IgM	7	15.2	9	8.6	4	12.9	0	0.0	Fisher's Exact Test	0.547

**Toxoplasma.gondii* IgM = significant (p<0.05)

Regarding residency (table 4). It was obvious that most of the cases, which constitute 55.4% (102/184) were reported from urban group, while only 9.8% (18/184) of the cases were from rural areas and 34.8% (64/184) from semiurban. The levels of IgM against *T. gondii* were high in semiurban group (6.2%) when compared with rural and urban groups.

Rubella In case of IgM of CMV and infections, rural group revealed high infection rate, (22.2% and 5.6%) respectively. Regarding IgM levels of HSV-2, the results show high infection rate among urban group (13.7%). The level of IgG for *T. gondii*, and Rubella were high in semiurban group (46.9% and 64.1%), respectively, on the other hand, the levels of CMV and HSV-2 were high in urban group (91.2% and 56.9%), respectively.

Table 4: Seropositivity of TORCH infections among abnormal group (BOH) related to environment (n=184)

TORCH	Type of immunoglobulin	Residency			Statistics					
		Rural	Semiurban	Urban	Test (value)	df	P value	Sig.		
Toxoplasma	IgG	6	33.3	30	46.9	30	29.4	Chi-Square (5.269)	2	0.072
		1	5.6	4	6.2	1	1.0	Fisher's exact		0.549
CMV	IgG	15	83.3	51	79.7	93	91.2	Chi-Square (4.582)	2	0.101
		4	22.2	10	15.6	15	14.7	Chi-Square (0.652)	2	0.722
Rubella virus	IgG	8	44.4	41	64.1	59	57.8	Chi-Square (2.299)	2	0.317
		1	5.6	0	0.0	2	2.0	Chi-Square (2.859)	2	0.239
HSV-2	IgG	10	55.6	36	56.2	58	56.9	Chi-Square (0.014)	2	0.993
		1	5.6	5	7.8	14	13.7	Chi-Square (2.001)	2	0.368

Table (5) shows the seropositivity of TORCH infections among women with BOH in relation to gestational period, of all agents. High infection rates 45.7% (84/184) were reported during the first trimester period of pregnancy as compared with other stages. On the other hand, the lowest rate of infection 12.5% (23/184) was recorded in the third trimester stage. The IgM levels against *T.gondii*, CMV, Rubella and HSV-2 were 4.8, 21.4, 2.4 and 14.3%, respectively.

Table 5: Seropositivity of TORCH infections among abnormal group (BOH) related to gestational period (n=184)

TORCH	Type of immunoglobulin	Gestational age			Statistics					
		1st Trimester (n=84)	2nd Trimester (n=77)	3rd Trimester (n=23)	Test (value)	df	P value	Sig.		
<i>Toxoplasma</i>	IgG	30	35.7	30	39.0	6	26.1	Chi-Square (1.278)	2	0.528
	IgM	4	4.8	2	2.6	0	0.0	Fisher's Exact Test		0.612
CMV	IgG	74	88.1	65	84.4	20	87.0	Chi-Square (0.470)	2	0.791
	IgM	18	21.4	10	13.0	1	4.3	Chi-Square (4.735)	2	0.094
<i>Rubella virus</i>	IgG	50	59.5	43	55.8	15	65.2	Chi-Square (0.686)	2	0.708
	IgM	2	2.4	1	1.3	0	0.0	Fisher's Exact Test		1.000
HSV-2	IgG	47	56.0	44	57.1	13	56.5	Chi-Square (0.023)	2	0.988
	IgM	12	14.3	5	6.5	3	13.0	Chi-Square (2.646)	2	0.266

Discussion

TORCH screening is routinely preferred by physicians, for detecting the infection among women during pregnancy period. The physicians concentrate on women with previous cases of BOH such as miscarriage and other types of congenital abnormalities. Many studies have been performed on the maternal infections of the fetus which play an important role in miscarriage and congenital abnormalities cases (Abdel-Fattah,2005; Denoj *et al.*,2008; Goncalves *et al.*, 2010; Al-Hindi *et al.*, 2010 ; Jasim *et al.*, 2011; Vilibic-Cavlek *et al.*, 2011).

In TORCH infections, the infected pregnant woman produce two types of specific antibodies against each infected pathogen. These are IgG and IgM antibodies and measuring the titers of these antibodies in the sera can identify the type of infection (Frey, 1999). In the present study the screening of IgG and IgM antibodies of TORCH infections in the sera of the pregnant women using ELISA, indicated the effectiveness of this test for the diagnosis and the estimation of past and recent infections with all these agents.

High infections rates (10.87%), among women with BOH with CMV was found, followed by HSV-2 infections (7.07%) and the lowest rates were with *T. gondii* 4 (2.17%) and *Rubella* (1.09%), and only 3 cases were seropositive for anti *T .gondii* plus anti CMV IgM antibodies .These results were in agreement with those of Denoj *et al.* (2008) in India in which they observed that cross infections with more than one of the TORCH agents were reported at a rate of 40.8% among studied women against any one of TORCH agents, multiple positivity observed against two pathogens in 31%and 8.5% against three pathogens, and 5.6% with all the four pathogens . The reason of variable seropositivity of TORCH infections in pregnant women from different area could be referred to the hygienic habits, cultural differences related to feeding habits, educational levels, primary health care program and early diagnosis of infections.

The results of the current study revealed that most of the cases (58.7%)were among housewives when compared with employed women (41.3%),this is an expected result which could be due to more chances of exposure of housewives to the sources of infections and they were at high risk factors during their home work at the day time. Also this study indicated that

most of the cases (57.1%) with BOH were recorded among the age group 25 – 31 years, followed by 18 –24 years old (25.0%) when compared with other age groups. This is similar to the findings of Al-Taie (2010) in Iraq which found that most of the cases (57%) with high delivery risk factors recorded among 21-30 years ,followed by 31-40 years (23%) when compared with other age groups. The age of 18 – 31 year was considered optimum period of child bearing age.

Also unexpected results of TORCH infections were recorded between women with BOH and their residency, it was found that most of the cases (55.4%) were from urban residents, while the lowest cases were from rural and semiurban areas (9.8 and 34.8%) respectively, this indicates that residency is not a major factor in correlation with TORCH infections. This coincide with the finding of Jasim *et al.*(2011) in Iraq they also found that most of the cases (51%) were from urban residents followed by rural residents (49%)

Regarding to gestation period, most of the cases of women with BOH occurred during the first trimester of gestation (45.7%) followed by the second trimester (41.8%) and the least during the third trimester (12.5%) . This is in agreement with the findings of Nabi *et al.*(2012) in Bangladesh they also found that most cases of TORCH infection in women with BOH occurred during the first trimester of gestation(41.44%) followed by the second trimester (31.53%) and then third trimester (27.03%) .The exact reason for this is not known but might be that the first trimester of pregnancy is an important period associated with several complications such as bleeding and inflammation of the uterus which lead to maternal infections by pathogenic organisms mostly belonging to the TORCH agents.

Due to the high seropositivity of TORCH infections among pregnant women with BOH, preventive measures should be considered. Therefore, all the pregnant women with BOH should be routinely screened for the TORCH infections for early diagnosis, proper treatment to prevent complications such as fetal abnormalities and death. On the other hand, in this study the screening tests for TORCH agents in normal pregnant women are not feasible but could be useful for detecting of reactivation of TORCH pathogens.

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پوخته:

گرتمهه نهمه خویندنی رهنگی هونهری وتاربیژی بۆ بآلو بوونهوهی تووش بوون [T] ([TORCH] ووخوپلاسم [R] و بهملا] ، [CMV] ، [HSV-2] (له نایوان 276 له نافرتهی سکیری ئهوانهی دوچار دهین له له دایک بوون هیتیر پیکمهه و سیس بوون له دایک بوون پیکمهه له نهمه خویندنی نهنجام دا پشکنی سهرجهه حالت له تمهن نهمهه دهکوئیت له نایوان [18-45] [سالی هونهری وتاربیژی له لایهن

ناقى کردنهوه [ELISA] بۆ ئاشکراکردن له لهشی کرداری دژ یا هاوتا [I] گ [G] و [I] گ [M] بۆ هۆکار نهخوشی.

نهنجام دا دابهش کردنی نهخوش بۆ کۆمهله ، 184 (66) ٪. (له نافرتهی ئهوانهی دوچار دهین له له دایک بوون هیتیر پیکمهه و 92 (33) ٪. (له نافرتهی ئهوانهیی له دایک بوونی پیکمهه بيشان دا نهنجام له سهرجهه [184] من [نافرتهی سکیر 66] 35 . [9] ٪ (کانۆی ئیجابی). گۆندیی [I] گ [G] و [6] 3) ٪. (کانۆی ئیجابی). گۆندیی [I] گ [M] و لهی کاتهی پهيوهندي پئوه بوون به [CMV] ، [109] 86) ٪. (کانۆی ئیجابی بۆ [CMV-I] گ [G]

و 29 (15) ٪. (بۆ [CMV-I] گ [M] لهسهر ناستی دوایین ، 108 (58) ٪. (و 3) ٪. (کانۆی ئیجابی بۆ [R] و بهملا [I] گ [G] و [I] گ [M] به پی ی ریز .و بوو ناست [I] گ [G] و [I] گ [M] دژ به [HSV] 2 [کانۆی ئیجابی که 140] 56) ٪. (و 20) 10) ٪. (به پی ی ریز بيشان دا نهنجام له سهرجهه پشکنی 92 له نافرتهی سکیر ، 38 (41) ٪. (کانۆ ئیجابی). گۆندیی [I] گ [G] و حالت يک تهنها) 1) ٪. (بوو [إیجابیة]. [T] گۆندیی [I] گ [M] و به دیار کهوتن که 79 (85) ٪. (و 5) 5) ٪. (کانۆی ئیجابی دژ به [CMV-I] گ [G] و [CMV-I] گ [M] به پی ی ریز .و بوو وه لأم دانهمه بۆ [R] و بهملا-I] گ [G] 43 (46) ٪. (و 1) ٪. (و 1) [R] و بهملا-I] گ [M] له نایوان کۆمهلهی به لآ لهی کاتهی بوو [الاصابه] [بHVS 2] ، [48] 52) ٪. (بۆ [I] گ [G] و [4] 4) ٪. (بۆ [I] گ [M]

و بوو تووش بوون [TORCH] سهروه گهلیک له لای نافرته له کۆمهله [BOH] له ئه نافرتهی پیکمهه بۆ له دایک بوون.

بیشان دا نهنجام له سهرجهه پشکنی 184 له نافرتهی سکیر له کۆمهله [BOH] ، [102] 50) ٪. (دوچار دهین له لهبار چوون بۆ جار يهک ئهوه 50 (27) ٪. (له گهه لهبار چوون دوو جار ، 27 (14) ٪. (له گهه لهبار چوونی سیانی ، 5) 2) ٪. (له حالتهی لهبار چوون بۆ چوار جار یان زیاتر .بیشان دا نهنجام له سهرجهه 102 له نافرتهی سکیرى ئهوانهی دوچار دهینت له لهبار چوون يهک ، 43 (42) ٪. (کانۆی ئیجابی). گۆندیی [I] گ [G] و 2) 4) ٪. (کانۆی ئیجابی). گۆندیی [I] گ [M] لهی کاتهی پهيوهندي پئوه بوون بۆ تهئینهوه [CMV] له نایوان ئهوه کۆمهله ، بوو 89 (87) ٪. (کانۆی ئیجابی [CMV-I] گ [G] و 17 (16) ٪. (کانۆی ئیجابی بۆ [CMV-I] گ [M] و له لایهنی دیکه ، بوو 63 (61) ٪. (و 3) 2) ٪. (و [R] و بهملا-I] گ [G] و [R] و بهملا-I] گ [M] ئیجابی به پی ی ریز .به لأم ناست [I] گ [G] و [I] گ [M] ضد-HVS 2 [کانۆی ئیجابی له 63 (61) ٪. (و 14) 13) ٪. (به پی ی ریز.

و لهی کاتهی پهيوهندي پئوه بوون به کۆمهلهی نافرتهی ئهوانهی دوچار دهینت له لهبار چوون دوو جار (50) ، ئاشکرا کرد نهنجام که 14 (28) ٪. (و 1) 2) ٪. (کانۆی ئیجابی [I] گ [G] و [I] گ [M] گۆندییعی التوالی . [له لایهنی دیکه 43] 86) ٪. (و 1) 0) ٪.

و ١٦). (٠% كانوى ئىجابى بۆ [CMV-I] گ [G] و [CMV-I] گ [M] به پى ي ريز. بهر بهر مكنانى دهكات [R] و بهللا [I] گ [G] له ٢٩) (٥٨. [٠% (له حالتهى لهبار چوون دوو جار ، لهو كاتهى حالته دژ به [I] گ [M] من [R] و پىكى خوى نهبوو به نهدام هر تووش بوون. و لهو كاتهى پهيوهندي پيوه بوون به ناست [I] گ [G] و [I] گ [M] دژ به [HSV-٢] ، پيشان دا خوئندن كه ٢٩) (٥٨. [٠% (و ٣) ٦ كانوى ئىجابى به پى ي ريز.

و بوو ژمارهى حالته له لهبار چوونى سياننى ٢٧ حالته ، له نهمه حالتهى (١١). [١% (كانوى ئىجابى). [گوندىي [I] گ [G] لهو كاتهى دمر دهكويته هر حالته دژ به

[. گوندىي [I] گ [M] و بوو ريزهى ٣) (٤. [٢% (و ٢٢) (٣٠. ٦. [٥% (كانوى ئىجابى) للمضاد [CMV-I] گ [G] و [CMV-I] گ [M] به پى ي ريز. بهر بهر مكنانى دهكات و هلام دانهمه بۆ [R] و بهللا [I] ، [٢] [I] گ [HSV-٢] گ [G] و [HSV-٢] [I] گ [M] له ١٢) (١٦. [٧% (، و ١٠) (١٣. [٩% (و ٠) (٠. [٠% (٣،) (٤. [٢% (به پى ي ريز.

و بوو ژمارهى حالتهى لهبار چوون بۆ چوار جار يان زياتر ٥) (حالته ، له نهمه حالتهى ١) (٢٠. [٠% (،) (٥ ،) [١٠٠% (،) (١،) (٢٠. [٠% (كانوى ئىجابى بۆ). [گوندىي [I] گ [G] و [I] گ [M] گوندىي [CMV] [به پى ي ريز. لهسر ناستى دوايىن ، ٤) ([٨٠% ([٢،) ([٤٠% (كانوى ئىجابى بۆ [R] و بهللا [I] گ [G] و [HSV-٢] گ [I] گ علي [به دواى يهكدا ، لهو كاتهى نهبوو هميه هر تووش بوو دژ به [I] گ [M] له ههمان هوكار نهخوشى. كه ١٣٤) (٧٢. [٨% (له نافرمتهى سكيپر له كومله [BOH] ، ١٤ ([٧% ([بوو لايى لهدايك بوونى شيووا پاك دوايىن ، ١٣) (٧. [١% (دواكوتن گشه كردن لهناو رحم ، ١٠) (٥. [٤% (له) لهدايك بوونى زوو و ١٣) (٧ لهدايك بوونى مردوو نهو.

هروهها دوزيبهوه كه ژمارهى حالته بوو نرم ٢/ ١٨٤/ [١]. [١% (بۆ چيني تمهنم له [٣٩-٤٥] سال لهو كاتهى كه زوربهى حالته ١٠٥/ ١٨٤/ [٥٧]. [١% (لهنيوان ٢٥ ٣١ سال. و لهراستيدا دوزيبهوه كه وهلام دانهمه [I] گ [G] دژ به [گوندىي ١٩) (٤١). [٣% (و ٤٢) (٩١. [٣% (ل [CMV] و ٦٥) (٢. [٢% (بۆ [HSV-٢] [كانو زياتر باو له چيني تمهنم ١٨ ٢٤ سال

تعنها له [R] و بهللا [و هلام دانهمه بوو بهرز له سسرجهم تمهنم. ههرهوك دوزيبهوه هروهها كه [الاستجابة [CMV-I] گ [G] بوو بهرز [٢٨) (٩٠. [٣%

له چيني تمهنم له [٣٢-٣٨] سال [تليلها [٨٧) (٨٢. [٩% (له چيني تمهنم له [٢٥-٣١] سال. دهر بارهى [I] گ [M]. [گوندىي [CMV] ، و [R] و بهللا [و HSV-٢] بهرز له چيني تمهنم [١٨-٢٤] سال له لاي بهرورد له گمل كومله ديكه و بوو ٥) (١٠. [٩% (، ٩) (١٩. [٦% (،) (١،) (٢. [٢% (و ٧) (١٥. [٢% (به پى ي ريز.

و بهدياركوتن له نئجماى ئىجابى بۆ تووش بوون [TORCH] لهنيوان كوملهى نافرمته [BOH] لهو كاتهى پهيوهندي پيوه بوون به ماوهى سكيپرى ، له سسرجهم حالته بوو ريزهى تووش بوونى بهرز ٨٤/ ١٨٤/ [٤٥]. [٧% (له ماوهى مانگى سى يهكه له سكيپرى بهرورد له گمل قوناغى ديكه. لهسر ناستى دوايىن ، بهر بهر مكنانى دهكات نرمترين تيكرائ تووش بوون ٢٣/ ١٨٤/ [١٢. [٥% (له قوناغى سى مانگ دوايىن له سكيپرى. بوو ناست [I] گ [M]. [گوندىي [I] ، [CMV] ، [R] و بهللا [و HSV-٢] [بهم شيوه ٢١) (٤،) (٤. [٨% (و ٢. [٤ و ١٤. [٣% (به پى ي ريز.

الخلاصة

تضمنت هذه الدراسة مدى انتشار إصابات TORCH (*Toxoplasma, Rubella, CMV, HSV-2*) بين 276 من النساء الحوامل من اعمار مختلفة تراوحت من 18- 45 سنة الذين يعانون من ولادات غير سوية وذوي الولادات السوية حيث تم فحص جميع الحالات مصليا بواسطة اختبار ELISA للكشف عن الأجسام المضادة IgM و IgG لمسببات الأمراض. تم تقسيم المرضى إلى مجموعتين، 66.7% (184) (من النساء الذين يعانون من ولادات غير سوية و 33.3) (92) (من النساء اللواتي ولاداتهم سوية. اظهرت النتائج من مجموع 184 من النساء الحوامل ان 35.9) (66% (كانوا إيجابيا IgG *T.gondii* و 3.3) (6% (كانوا إيجابيا IgM *T.gondii* وفيما يتعلق ب *CMV*، 86.4) (159% (كانوا إيجابيا ل *CMV-IgG* و 15.8) (29% (ل *CMV-IgM*. على صعيد آخر، 58.7) (108% (و 1.6) (3% (كانوا إيجابيا ل *Rubella IgG* و *IgM* على التوالي. وكانت مستويات *IgG* و *IgM* ضد *HSV2* كانوا إيجابيا حيث 56.5) (140% (و 10.9) (20% (على التوالي.

اظهرت النتائج من مجموع فحص 92 من النساء الحوامل ، 38(41.3)٪ كانوا ايجابيا *T.gondii* IgG وحالة واحدة فقط (1.1)٪ (كانت ايجابية *T.gondii* IgM وتبين أن 79(85.9)٪ و 5(5.4)٪ كانوا ايجابيا ضد *CMV-IgG* و *CMV-IgM* على التوالي. وكانت الاستجابة لـ 43(46.7)٪ *Rubella-IgG* و 1(1.1)٪ بين المجموعة العادية. فيما كانت الاصابه بـ *HVS2* ، 48(52.2)٪ الى *IgG* و 4(4.3)٪ الى *IgM* وكانت اصابات TORCH أعلى بكثير لدى النساء من مجموعة BOH من تلك النساء السويات للولادات.

اظهرت النتائج من مجموع فحص 184 من النساء الحوامل من مجموعة BOH ، 102(55.4)٪ (يعانون من الإجهاض لمرة واحدة 27.2)٪ (مع الإجهاض مرتين، 14.7)٪ (مع الإجهاض الثلاثي، 2.7)٪ (من حالات الإجهاض لأربعة مرات او أكثر).

اظهرت النتائج من مجموع 102 من النساء الحوامل اللواتي يعانين من الإجهاض واحدة، 43(42.2)٪ (كانوا ايجابيا *T.gondii* IgG و 2(4.9)٪ (كانوا ايجابيا *T.gondii* IgM. فيما يتعلق لعدوى *CMV* من بين تلك المجموعة، كان 89(87.3)٪ (كانوا ايجابيا *CMV-IgG* و 17(16.7)٪ (كانوا ايجابيا لـ *CMV-IgM* ومن ناحية أخرى، كانت 63(61.8)٪ (و 3(2.9)٪ لـ *Rubella-IgG* و *Rubella-IgM* ايجابية على التوالي. اما مستويات *IgG* و *IgM* ضد *HVS-2* كانوا ايجابيا في 63(61.8)٪ (و 14(13.7)٪ (على التوالي).

و فيما يتعلق بمجموعة النساء اللواتي يعانين من الإجهاض مرتين (50)، كشفت النتائج أن 14(28.0)٪ (و 1(2.0)٪) كانوا ايجابيا *IgG* و *T.gondii* IgM على التوالي. من ناحية أخرى 43(86.0)٪ و 16(8.0)٪ كانوا ايجابيا لـ *CMV-IgG* و *IgM* و *CMV-IgM* على التوالي. سجلت *Rubella-IgG* في 29(58.0)٪ (من الحالات الإجهاض مرتين، في حين حالات ضد *IgM* من الممرض نفسه لم تسجل اي اصابة. و فيما يتعلق بمستويات *IgG* و *IgM* ضد *HSV-2*، اظهرت الدراسة أن 29(58.0)٪ (و 3(6.0)٪ (كانوا ايجابيا على التوالي).

وكان عدد الحالات من الإجهاض الثلاثي 27 حالة، من هذه الحالات 8(11.1)٪ (كانوا ايجابيا *T.gondii* IgG بينما لم تظهر أي حالة ضد *T.gondii* IgM وكانت نسبة 4.2)٪ (و 3(30.6.5)٪ (كانوا ايجابيا للمضاد *CMV-IgG* و *CMV-IgM* على التوالي. سجلت الاستجابة لـ *Rubella*، *2HSV-IgG* و *HSV-2 IgM* في 12(16.7)٪، و 10(13.9)٪ (و 0(0.0)٪، 3(4.2)٪ (على التوالي).

وكان عدد الحالات الإجهاض لأربعة مرات او اكثر (5) حالات، من هذه الحالات 1(20.0)٪ (، 0(0.0)٪، 5(100)٪، 1(20.0)٪ (كانوا ايجابيا لـ *T.gondii* IgG و *T.gondii* IgM و *CMV* على التوالي. على صعيد آخر، 4(80)٪ (، 2(40)٪ (كانوا ايجابيا لـ *Rubella-IgG* و *HSV-2 IgG* على التوالي، في حين لم تكن هناك أي اصابه ضد *IgM* من نفس مسببات الأمراض.

أن 134(72.8)٪ (من النساء الحوامل من مجموعة BOH ، 14(7.6)٪ (كانت لديهم ولادات مشوهين خلقيا، 13(7.1)٪ (تأخر النمو داخل الرحم، 5.4)٪ (من الولادة المبكرة و 7.1)٪ (ولادات ميتة).

وقد وجد أن عدد الحالات كانت منخفضة 1.1 (2/184)٪. ينتمون إلى الفئة العمرية من 45-39 سنة في حين أن معظم الحالات 57.1 (105/184)٪ بين 31-25 سنة. و قد وجد أن الاستجابة لـ *IgG* ضد *T.gondii* 19 (41.3)٪ (و 42(91.3)٪ *CMV* و 30(65.2)٪ *HSV-2* كانوا أكثر شيوعا في الفئة العمرية 24-18 سنة إلا في *Rubella* الاستجابة كانت عالية في جميع الأعمار. كما وجدت أيضا أن الاستجابة *CMV-IgG* كانت عالية 90.3 (90.3)٪ (في الفئة العمرية من 32-38 سنة تليها 82.9)٪ (في الفئة العمرية من 31-25 سنة. فيما يتعلق بـ *T.gondii* IgM ، *CMV* ، و *Rubella* و *HSV2* عالية في الفئة العمرية 24-18 سنة عند المقارنة مع المجموعات الأخرى وكانت 10.9)٪ (، 9(19.6)٪ (، 1(2.2)٪ (و 7(15.2)٪ (على التوالي).

وتبين من النتائج الايجابية للاصابات TORCH بين مجموعة النساء (BOH) فيما يتعلق بفترة الحمل، في جميع حالات كانت معدلات إصابة عالية 45.7 (84/184)٪ في فترة الأشهر الثلاثة الأولى من الحمل مقارنة مع المراحل الأخرى. على صعيد آخر، سجلت أدنى معدل الإصابة 12.5 (23/184)٪ في مرحلة الثلاثة اشهر الاخيرة من الحمل. كانت مستويات *T.gondii* IgM ، *CMV* ، *Rubella* و *HSV2* بهذا الشكل 21.4٪، 4.8٪ و 2.4 و 14.3 على التوالي.