



## Determine anti human cytomegalovirus antibodies (IgM, IgG) and heat shock protein 70 in aborted women

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### Abstract

**Background:** The aim of the study was to identify cytomegalovirus antibodies (IgM, IgG), heat shock protein 70 and to affect contact with animals on aborted women. This is Iraq's first study, no other studies to determine the relationship between CMV infection and HSP70 concentration in aborted women have been conducted. **Method:** During the duration from July to December (2018), 160 blood samples were obtained from women suffering from repeated embryo predictions, which were used by reviewers in privatelaboratories in the province of Basrah, Iraq to estimate the levels of cytomegalovirus (IgM, IgG) and heat shock protein 70. **Result:** The results showed that level IgM had higher rates in age (26-30) year at a rate of 26.7% with significant difference compared to other age groups, whereas level IgG had higher rates in age (31-35 & 36-40) at rate of 100%. Also we found in this results significant relationship between IgM and primary abortion at rate 16.7% in the age group (26-30). But the results show that IgG had a higher rat in the age group (31-35) at rate 68.1% with significant diffrents compared with Primary abortion woman. In addition, the study showed that HSP70 concentration in aborted women was high rate of 38% and a higher concentration show in the 4th age group at rate of 56.3% in 320 ng/ml concentration. The study showed also that HSP70 concentration in aborted women was high rate of 38% and a higher concentration show in the 4th age group at rate of 56.3% in 320 ng/ml concentration, also we found that two and more abortions had the highest rate of 62 %, with significant differences relative to other abortions. The study also showed that aborted poultry breeders women were 42.6% higher with significant difference compared to other groups. **Conclusion:** Observed that the first age group is more vulnerable to HCMV infection during pregnancy in thistudy relationship between HSP70 and Poultry Breeders with abortion, too.

**Keywords:** cytomegalovirus, hsp70, infection, anti human cytomegalovirus (igm, igg)

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### INTRODUCTION

Abortion is a significant and pervasive global health, social and economic problem caused by many causes, including uterine and genetic disorders endocrine dysfunction, immune deficiency, environmental, psychological and nutritional factors, bacterial or viral factors such as cytomegalovirus (Chopra et al. 2004, Hussan 2013, Sebastian et al. 2008). Considered a human cytomegalovirus that induces intrauterine infection in women from the highest risk of other infections during childbirth due to the ability of the virus to affect a fetus, resulting in spontaneous abortion or congenital abnormalities (Abdul Wahab 2012, Jones et al. 2001, Stagno 2001). The virus can escape host immunity in several ways (Aigberua 2019, Nahum et al. 2012). The disease is omnipresent in all different distributions around the world, affecting larger areas in developing countries and populations of lower socioeconomic status (Elamin and Omer 2015). In response to many symptoms, including viral infection,

heat shock proteins (HSP70) play a major role. Chaperons of heat shock proteins (Asea 2005, Karsten et al. 2019). Recently, the anti-HSP70 antibodies have been suggested as an effective disease marker, Federica (Diberardino et al. 2007). Diagnosis of cytomegalovirus infection in a pregnant woman's blood (IgM, IgG) (Hama and Abdurahman 2013). The purpose of this study was to estimate the level of anti-human cytomegalovirus (IgM, IgG) and heat shock protein 70.

### MATERIAL & METHODS

#### Collect Blood Samples

The one hundred and sixty blood samples obtained from women suffering from repeated embryo projections from private laboratories in Basrah province, Iraq, during the period July/2018 to December/2018.

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**Table 1.** Seroprevalence of HCMV in the abortion group

Age/year	Total	Positive cases		Anti HCMV IgG		Anti HCMV IgM	
		No.	%	No.	%	No.	%
20 -25	60	40	37	35	87.5	5	12.5
26-30	40	30	27.8	22	73.3	8	26.7
31-35	35	22	20.4	22	100	0	0
36-40	25	16	14.8	16	100	0	0

**Table 2.** Seroprevalence of anti-HCMV IgM among primary and recurrent aborted women

Age groups	Primary abortion		Recurrent Abortion		Total
	IgM+ (No.)	%	IgM+ (No.)	%	
20 -25	5	12.5	0	0	40
26-30	5	16.7	3	10	30
31-35	0	0	0	0	22
36-40	0	0	0	0	16
Total	10	9.2	3	2.8	108

**Table 3.** Seroprevalence of anti-HCMV IgG among primary and recurrent aborted women

Age groups	Primary abortion		Recurrent Abortion		Total
	IgG + (No.)	%	IgG + (No.)	%	
20 -25	12	30	25	62.5	40
26-30	7	23	18	60	30
31-35	7	31.8	15	68.1	22
36-40	7	43.8	9	56.25	16
Total	33	30.5	67	62.03	108

**Sampling**

The 3 ml of venous blood was collected in a single tube and centrifuged for 3 minutes (30,000 rpm/min). Using the serum to diagnose infection and estimate the rate of antibodies, IgM, IGg used the ELFA method and measure the heat shock protein concentration 70 (HSP70) using the ELISA test.

**Enzyme Linked Fluorescent Assay (ELFA)**

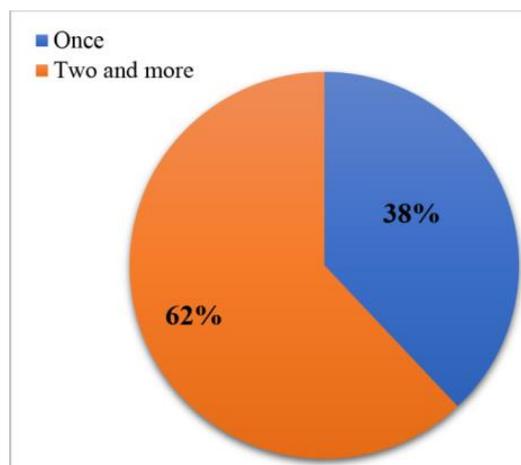
In the present study, the Enzyme Linked Fluorescent Assay (ELFA) test was used to detect immunoglobulins IgG and IgM directed against toxoplasmosis antibodies in sera of aborted women, their husbands, and healthy people. According to guidance from the manufacturer. Kit (VIDAS Toxo IgM, France, Toxo VIDAS IgG, France).

**Detection of Heat Shock Protein 70 (HSP70)**

In the serum of the samples under analysis using human heat shock protein (HSP70) ELISA Kit MBS91371244, immunosorbent assay (ELISA) and sandwich procedure for calculating the concentration of heat shock protein 70 (HSP70) was used.

**Statistical Analysis**

Chi square test (SPSS) has been used to find a link between categorical data.



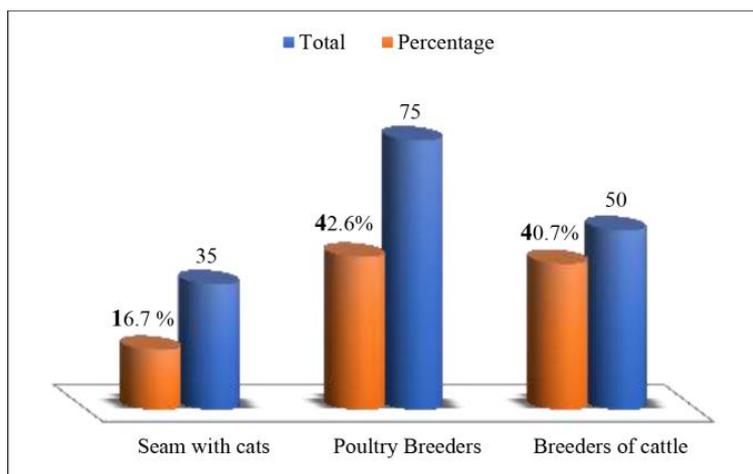
**Fig. 1.** Distribution of the women according to the number of abortions

**RESULTS**

The results in **Table 1** showed that level anti-HCMV IgM antibody had a higher rate in (26-30) age group at a rate of 26.7% with a significant difference compared to the other age group, while level anti-HCMV IgG had a higher rate in the third (31-35) and the fourth (36-40) age group at rate of 100 %, also the results showed in **Table 2** that anti-HCMV IgM had higher rate 16.7% in age group 26-30 among primary abortion woman with significant different compared with recurrent abortion. But the results show in **Table 3** that anti-HCMV IgG among recurrent aborted women had higher rat in age group (31-35) at rate 68.1% with significant differences compared with primary abortion woman. As well as the result showed in **Table 4** that concentration HSP70 in aborted women was the highest rate of 38 % in concentration 320 ng/ml with substantially different compared to other concentration, the results also showed that the fourth age rate was 56.3% higher compared to other age groups. According to the number of abortions the result show in **Fig. 1** that two and more abortions had high rate 62% with significant difference, as well as study showed in **Fig. 2** that women aborted poultry breeders were 42.6% higher with a significant difference compared to other groups.

**Table 4.** Distribution concentration HSP70 in aborted women according age Groups

State	Sample	HSP70											
		V +		20 ng/ml		40 ng/ml		80 ng/ml		160 ng/ml		320 ng/ml	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
F	160	108	67.5	5	4.6	10	9.2	22	20.4	30	27.8	41	38
<b>Age groups</b>													
20-25	60	40	66.6	0	0	6	15	5	12.5	10	25	19	47.5
26-30	40	30	75	2	6.6	4	13.3	9	30	7	23.3	8	26.6
31-35	35	22	62.9	3	13.6	0	0	5	22.7	9	40.9	5	22.7
36-40	25	16	64	0	0	0	0	3	18.8	4	25	9	56.3
Total	160	108	67.5	5	4.6	10	9.2	22	20.4	30	27.8	41	38



**Fig. 2.** Distribution of infected samples according to contact with animals

## DISCUSSION

The occurrence of CMV infection during pregnancy is very high in Iraq and a high rate of spontaneous abortion is associated with the detection of a primary CMV infection. In the present study, a high level of IgM antibody suggests that the disease is acute, and people in this age group are believed to have an acute injury. During the first weeks of injury, the HCMV IgM antibody is present. Karacan et al. (2014) found that the seropositivity rate of CMV was 84.1%. Akin et al. (2016) also demonstrated in his research that the high incidence of CMV infection in Turkey during childbirth and showed that primary CMV infection is associated with higher rates of spontaneous abortion, several studies in developed countries have shown that CMV IgG is prevalent. Some study suggested that infection with CMV may cause fetal death (Inoue et al. 2001, Ko et al. 2000), few studies were conducted to determine the relation between infection with maternal CMV and spontaneous abortion. Our findings indicate that infection with maternal CMV can lead to spontaneous

abortion and early fetal death (Yan et al. 2015). Results showed a mixture of CMV IgG antibodies. In order to evaluate the relationship between early fetal loss with or without CMV IgG antibody positivity, few studies have been conducted. Yet Odl et al.'s analysis (2011) found that CMV IgG antibody was not associated with repeated spontaneous abortions. While Akin et al. (2016) showed that primary and recurrent infection with CMV was found to be 0.3 % (8 women) And 0.8 %, respectively (26 women). The results of this study showed a relationship between CMV infection and HSP70 concentration in aborted women, especially in the fourth-age group which is seropositive to CMV IgG. There were no studies conducted to assess the relationship in aborted women between maternal CMV infection and HSP70 concentration. Virus infection of the host's body directly or indirectly Several studies have shown that heat shock protein 70 plays a negative role in virus infection, a study by Gang et al. (2011) showed that Hsp70 negative influenza virus RNP activity, and Mayer (2005) suggested that Hsp70 participated in viral infection growth.

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