WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 6.805
Volume 5, Issue 8, 1615-1621. Research Article ISSN 2277– 7105

SEROPREVALENCE STUDY OF HUMAN CYTOMEGALO VIRUS INFECTION AMONG BAD OBESTETRIC HISTORY AND PRIMIGRAVIDA PREGNANT WOMEN IN IRAQ

[1]*Noor Al- Huda Ali A. H. Saeed, [2]Liqaa Jammel Ibraheem, [3]luma Qasim Ali, [4]Enas Waleed Shakir and [5]Rana S. Jawad

Department of Biology, College of Science, Al-Mustansiriya University, Baghdad/ Iraq.

Article Received on
21 June 2016,

Revised on 11 July 2016,
Accepted on 31 July 2016

DOI: 10.20959/wjpr20168-6860

***Corresponding Author**
Noor Al- Huda Ali A. H. Saeed
Department of Biology, College of Science, Al-Mustansiriya University, Baghdad/ Iraq.

ABSTRACT

This study was designed to evaluate cytomegalovirus infection among pregnant women correlation with age and the trimester of pregnancy, venous blood was private laboratories during the period between December 2014 until March 2015. Randomly selected serum samples were tested for specific anti CMV antibodies (IgM&IgG) using commercial ELISA kit (Human, Germany). Series of 170 patient that included 90 patient had bad obstetric history and 80 pregnant women had primigravida that aborted in different time (1st, 2nd, 3rd trimester of pregnancy). The results of current study showed that the anti CMV IgM among group I, was (36.6%) 33 out of 90 higher than group II which was (32.5%) 26 out of 80 women. and anti CMV IgG in group II (77.5%) 62 out of 80, higher than in group I, which was (61.1%) 55 out of 90. While, anti CMV antibodies, IgM, IgG were 21 out of 90 (51.2%) in group I and 20 out of 80 (48.7%) in group II. The total of 170 women patients with mean age 27.7 years ranged between (16- 42) years consisted of 61% aged between (16 – 30) years, 38.9% aged between (31 -42) years for group I and 62.5% within (16 -30), 37.5% between (31 – 42) years. The gestational period for group I were 55.5%, 35.5%, 8.9% in the first, second and third trimester of pregnancy. It could be concluded from our study that the seroprevalence of CMV infection among pregnant women and high percentage of infections among those patients who extremely high level of ignorance about the disease. That's why, every pregnant women should be tested for CMV serological status.

KEYWORDS: CMV (Cytomegalo virus), bad obstetric history, primigravida, pregnant women.

INTRODUCTION

Human Cytomegalo virus is a widespread pathogen responsible for asymptomatic and persistent infection in healthy individuals.[1] It is the largest virus in the herpesviridae family and it is indistinguishable morphologically from other human herpeaviruses.[2] HCMV transmission from person to person is entirely unknown but is presumed to occur through bodily fluids, sexually and via breast milk.[3] Cytomegalovirus is the most common among viral infection during perinatal period that cause congenial CMV infection.[4] Congenital cmv infection occurring approximately of all live births and it can cause birth defects and childhood disabilities.[5,6] Previous studies reported that maternal primary CMV infection during pregnancy makes amajor cause of sever congenital infection in developed countries.[7] Human cytomegalo virus could be found throughout all geographical locations and socioeconomic groups. It can be infects about 60-70% of adults in industrialized countries and 100% in emerging countries.[8] During all herpes viruses, CMV is the most genes dedicated to evading innate and adaptive immunity in the host and represents a long life burden of antigenic T cell surveillance and immune dysfunction, so, it is commonly indicates by presence of antibodies in general population.[9,10]

Tow specific antibodies are associated with human cytomegaloviruseinfection, immunoglobulin (IgM) antibody which indicates a recent infection and (IgG) antibody which indictes an old infection and immunity.[11]

MATERIAL AND METHODS

Collection of blood samples

Blood samples collected from 170 pregnant women with age ranged between (16 – 42) years, all of these women had abortions. They were collected from different private laboratories of Baghdad city. The 170 pregnant women divided in to 90 women had bad obstetric history and 80 patients had primigravida. Ten ml of venous blood were collected randomly from each patient, during the period between December 2014 until March 2015. Blood samples were centrifuged on 4000 rpm for 5 minute to separate the serum from blood and then to test for cytomegalovirus (IgG and IgM) antibodies by using of ELISA commercial kit (human, Germany).

Preparation of samples

The samples were prepared by diluting 10ml of patients serum with 1 ml of sample diluent in the test tube, then mixed gently for five minutes and covering with adhesive strips then incubated for 30minutes at room temperature after that washed 4times with washing solution adding 100ml of conjugate to each well covered and incubated at room temperature for 30 minutes washing the wells 5 times with washing solution and adding 100 ml of substrate, covering and incubating for 30 minutes, then adding 50 ml of stop solution, finally measure the absorbent at 450 nm within 30 minutes.

RESULTS

This study was designed to evaluate human cytomegalovirus infection among pregnant women in relation with age of each women and the trimester of pregnancy. The total of 170 pregnant women was analyzed for cytomegalovirus IgG and IgM antibodies by using ELISA technique.

Our studied group of patients with mean age 27.7 years with age ranged between (16-42) years. The current study found the age of gestational age of pregnancy was related in highly significant association with CMV infection at ($p<0.01$).

As we can see in figure (1) the total of 170 patients divided in to two groups, 90 women had bad obstetric history (BOH) in their first, second and third trimester (55.5%), (35.5%) and (8.9%) respectively. whereas, 80 women had primigravida that aborted in first, second and third trimester (48.7%),(25%) and (13.7%) respectively, so, there is a highly significant association at ($p<o.o1$) as shown in table (1).

As shown in figure (2), the seroprevalence of recently infection of HCMV IgM positive in group I was 33(36.6%) whereas, in group II was 26 (32.5%) statically it was no significant association at ($p<0.05$) so as in table (2).

The seroprevalence of CMV IgG latent infection in group I was 55(61.1%) and in group II was 62(77.5%) as shown in figure (2), statically, it was a highly significant association at ($p<0.05$) so as we can see in table (2)

The positive combination presence of specific anti CMV antibodies IgG and IgM was 21 (51.2%) for group I, 20 (48.7%) for group II respectively.

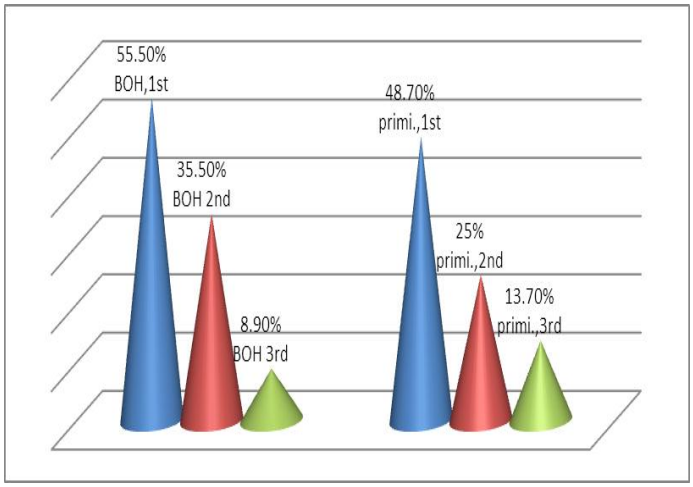

Figure (1): The trimester of pregnancy in BOH and primigravid women.

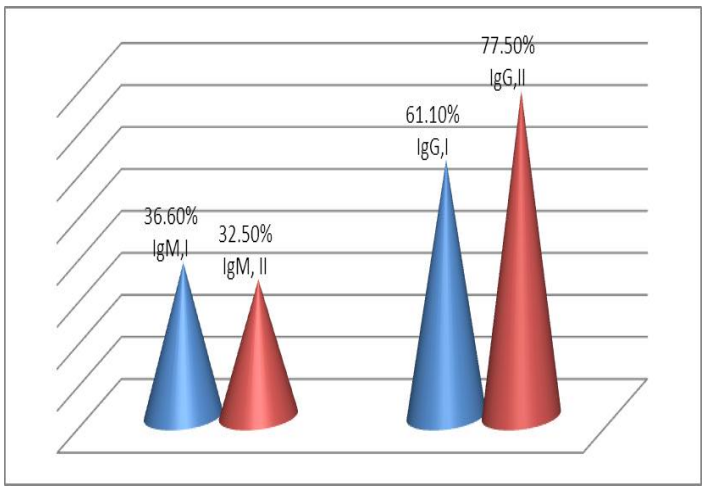

Figure (2): seroprevalence of HCMV Igm, IgG positive results in group I and II

Table (1): Distribution of age and trimester of pregnancy in relation with (group I) of BOH and (group II) primigravida women

The factor	Group I (BOH) Total no. = 90	Group II (primigravid) Total no. = 90	P_ VALUE x^2 test
Age 16-30 31-42	 55(61.11%) 35(38.89%)	 50(62.50%) 30(37.50%)	 P= o.o13 x^2= 9.277 **
Trimester of pregnancy First Second Third	 50 (55.56%) 32(35.56%) 8(8.89%)	 39(48.75%) 20(25.00%) 11(13.75%)	 P= 0.0109 x^2= 9.807 **

*highly significant at p< 0.05.

DISCUSSION

Human cytomegalovirus infection unnoticed typically in healthy people, it is like other herpes viruses can establishes latency and reactivates under condition of immunocomromised such as HIV infected persons.[12,13] Maternal CMV is a common viral infection during perinatal period and it can be cause congenital CMV infection with pregnant hearing neurological impairment and vision loss.[14,15] The results of this study shows that the 170 aborted women were divided in to two groups, 90 women had bad obstetric history and 80 women had primigravid. About half of those patients aborted in their first trimester 55.5% in group I and 48.7% in group II, it suggested that the highest occurrence of abortion observed in the first trimester because of the most pregnant women presented in the hospitals in their second and third months of pregnancy.

In this study the seroprevalence of recently infection of cytomegalovirus IgM positive in group I were 33 out of 90 (36.6%), furthermore, in group II were 26 out of 80 (32.5%). Statistically it was no significant correlation. IgM antibodies indicate for acute infection because of these antibodies is not usually in acquired immunity and it is very rare in chronic infections. While, seroprevalence of latent infection IgG in group I was 55 out of 90 (61%) and for group II, 62 out of 80 (77.5%), statistically there is highly significant difference.

The seroprevalance of CMV IgG among pregnant women was reported to be higher in other studies 72.2%[16] and 87%,[17] and disagreed with[18] which reported low prevalence of CMV IgM only (2.5%) during pregnant women.

The double positive result for specific antibodies IgM and IgG is 21 out of 170 (51.2%) in group I and in group II was 20 (48.7%) out of 170.

The double positive results for specific antibodies IgM and IgG is 41 out of 170 (24.1%) in group I and II was 21 (51.2%) and 20 (48.7%) respectively.

The women age of studies group was 27.7 years, it is compatible with[16], that reported the mean of their patients was 25.7 years[16] reported the highest results than our finding results which was their double positive prevalence of IgG and IgM antibodies combination 74.8%
It is suggested that the way of this testing is not completing beneficial for the current pregnant women, it is recommended for all women in childbearing age should be screened

for cytomegalovirus infection, in case of they do not have an immunity from their childhood vaccination.[19]

Table (2): Frequency distribution of T. gondii IgM and IgG antibodies using ELISA test in (BOH) and (primigravid)

The factor	Group I(BOH)	Group II (primigravid)	p-value x^2 test
Positive (IgM)	33 (36.67%)	26 (32.50%)	P= 0.529 x^2= 1.088 NS
Negative(IgM)	57 (63.33%)	54(67.50%)	P= 0.663 x^2= 0.891 NS
Positive (IgG)	55(61.11%)	62(77.50%)	P= 0.0426 x^2= 4.691*
Negative (IgG)	35(38.89%)	28(22.50%)	P= 0.0317 x^2= 5.163 *
Positive IgM + IgG	21(51.22%)	20(48.78%)	P= 0.942 x^2= 0.475 NS

*significant at $p < 0.05$, NS: non- significant.

REFERENCES

1. Mmarchtti S.; Sanlangelo R; Manzara S.; Donglia S.; Fadda G.; Cattani P.; Comparison of real time PCR and PP65 antigen assays for monitoring the development of cytomegalovirus disease in recipients of solid organ and bone marrow transplants. New microbial. 2011; 34(2): 157-64.
2. Ryan KJ.; Ray CG.; (editors). (2004). Sherries medical microbiology (4th Ed) McGraw hill. Pp 556-9.
3. Taylor GH. (2003). Cytomegalovirus Am Fam physician, 67(3): 519-24.
4. De paschale M.; Agrappi C.; Manco MT.; Paganini A.; Clerici P.: incidence and risk of cytomegalovirus infection during pregnancy in an urban area of northernItaly. Infect dis Obstet Gynecol, 2009; 5: Doi: 10.
5. Kouri V.; Correa CB.; Verdasquera D.; Martinez PA.; Alvarez A.; et al. (2010) diagnosis and screening for cytomegalovirus infection in pregnant women in Cuba as prognostic markers of congenital infection in newborns. 2007-2008. Pediatric infect dis j, 29: 1105-1110.
6. Yamamoto AY.; Muss.; pinhata MM.; Isaac Mde Z.; Amaral FR.; Carvalheiro CG., et al. (2011); congenital cytomegalovirus infection as a cause of sensor neural hearing loss in a highly immune population, Pediatric infect dis J, 30: 1043-1046.

7. Cannon MJ.: (2009): congenital cytomegalovirus (CMV) epidemiology and awareness .J Clin Virol, 46: 56-10.
8. 8-Elizabeth G.; Damato and Caitlin W. Winnen (2006). cytomegalovirus infection :perinatal implication. J Obstet Gynecol neonatal nurse, 31(1): 86-92.
9. Ryan KJ.; Ray CG. (2004): Sherris medical microbiology (4thEd) McGraw Hill.pp. 556; 566-9.
10. S.Varani and M.P. Landini (2011). cytomegalovirus induced immunopathology and its clinical consequence herpesviridae, 2. (6): 6.
11. Lombardo PC. Dermatological manifestation of CMV. (2011) Available form; http //emedicine. Medscape.Com/article /113-3108.
12. Melnick M.; Sedghizadeh PP.; Allen CM.; Jaskoll T.; Sedghizadeh; Allen; Jaskoll (2011). melincik M., Sedghizadeh P.S., Allen C.M.., Jaskoll T. Experimental and molecular pathology, 92(1): 118-25.
13. Marchetti S.; Santangelo R.; Manzara S.; DONGHIA s.; Fadda G.; Cattani P. (2011) comparison of real time PCR and PP65 antigen assays for monitoring the development of cytomegalovirus disease in recipients of solid organ and bone marrow transplants. New microbial. 34(2): 157-64.
14. Alford (A. STAGNO S. pass RF. Britt WJ. (1990): congenital and perinatal cytomeglo virus infections Rev Infect Dis., 12(7): 745-753.
15. Caunon MJ. Schmid DS. Hyde TB. (2010): Review of cytomegolo virus seropervalence and dermographiccharicterstics associated with infection. Rev Med virol. 20(4): 202-13.
16. Hamdan Z. Hamdan: Ismail E. Abdelbagi; Nasser M. Nasser and Ishag Adam. (2011): seroprevalence of cytomegalo virus and rubella among pregnant women in western sudan. virology Journal. 8: 217.
17. EL- Nawawy A.; Soliman AT.; EL Azzouni O.: Amer S.; Karim MA.; Demian S.; el Azzouni O.; Amer S.; Karim MA.; Demian S.; el Sayed M. (1996): Mternal and neonatal prevalence of toxoplasma and cytomegalovirus (CMV)antibodies and hepatitis –B antigens in an Egyptian rural area. J trop pediatric. 42(3): 154-7.
18. Bello C.; Whittle H. (1991): cytomegalovirus infection in Gambian mothers and their babies. J clin pathol. 44(5): 366-9.
19. HPA. Guidance on viral rash in pregnancy. (2011).