

Serological Study Of Cytomegalovirus In Women Whom Admitted At AL-Najaf Hospital

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Abstract

This study detects the serological test and the prevalence of Cytomegalovirus infection in women (from 14-45 years) in AL-Najaf city, 300 samples were collected from AL-Zahraa Hospital, AL-Hakeem Hospital and central public health laboratory from the September 2019 to December 2019, 5ml of blood samples have been withdrawn from each women, centrifuged at 3000 r.p.m for 15 minutes, the serum has been aspirated to another test tube for storage in deep freeze (-20° C) until the time of analysis, the following laboratory testing, ELISA (CMV IgG, CMV IgM), The percentage of cases of total CMV that showed positive results for ELISA CMV IgG test were (289/96.3 %) from total sample, and for ELISA CMV IgM tests, were (6/2%) from total samples.

Keyword : *Cytomegalovirus, ELISA, CMV IgG, CMV IgM*

1. Introduction

Human cytomegalovirus (CMV) was isolated in 1956 for the first time (1). Craig *et al* named this virus according to its cytopathic effect that produced in the cell culture, where the virus cause cytomegalic changes with intranuclear inclusions, and so it is named Cytomegalovirus (2). It is a double-stranded DNA virus that belong to the Herpesviridae family (3). It has current infective rate ranges from 40% to 100% Worldwide (4). One of the previous studies shows that an IgM ELISA could be used in combination with an IgG avidity assay for monitoring pregnant women for primary HCMV infection (5). While the best method for detecting CMV in pregnant women is enzyme-linked immunosorbent assay (ELISA) for the correct diagnoses and treatment, HCMV infection is a common cause of congenital infections. It is a variable illness in clinical presentation that ranges from asymptomatic form (90% of cases) to severe and critical form and in rare cases, death because of abortion. Furthermore, 10%–15% of the children who are asymptomatic at birth may develop late squeal, especially hearing defects, after a period of months or even years (6). The risk of fetal damage is higher if the primary infection occurs during the first trimester of pregnancy (7). The prevalence of congenital infection ranges from 0.2% to 2.5% in different populations (8-9). Furthermore, the prevalence of congenital infection varies with the prevalence of the infection in the population (10). As well as increasing with age, may also depend on sexual activity and occupation, particularly occupations involving close contacts with children in a community setting. In the case of parents, contact with the urine or saliva of their children is a major source of infection (11, 12). The risk of acquiring an infection during pregnancy is 0.7–1.38 % (13).

2. Materials and Methods

2.1. The Patients:

Three hundred women admitted in AL-Zahraa hospital ,AL-Hakeem hospital and the central public health laboratory in AL-Najaf city from the September 2019 to December 2019 ,Their age range from (14-45) years old in interview questioner.

2.2. Study Design

All samples were subjected to investigation for presence of CMV infection by searching for IgG and IgM antibodies through ELISA test to detect the CMV

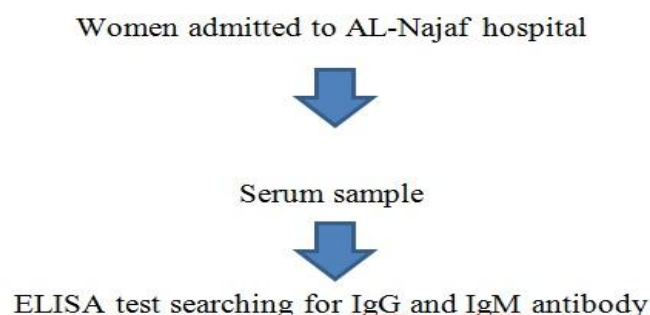


Figure 1 Flow Chart of Study Design

2.3. Methods

All samples were subjected to investigation for the presence of CMV infection by using of specific ELISA test that searching of both IgG and IgM.

3. Results

3.1. Results of ELISA Test

This study has been carried out on 300 women (aging from 14 to 45 years) including women with history of recurrent abortions and women with no history of recurrent abortions. The number of women who were detected as positive by use of ELISA CMV IgG test were 289 cases (218 women with history of recurrent abortions and 71 with no history of recurrent abortions) these positive cases represent 96.3 % from total study samples, and the number of women who were detected as positive by use of ELISA CMV IgM test were 6 cases, these positive cases represent 2 % from total study samples.

Table 1: Result of ELISA CMV IgG

State IgG status	Recurrent Abortions	Non Recurrent Abortions	Total	Percentage %
IgG +ve	218	71	289	96.3 %
IgG -ve	7	4	11	3.7 %

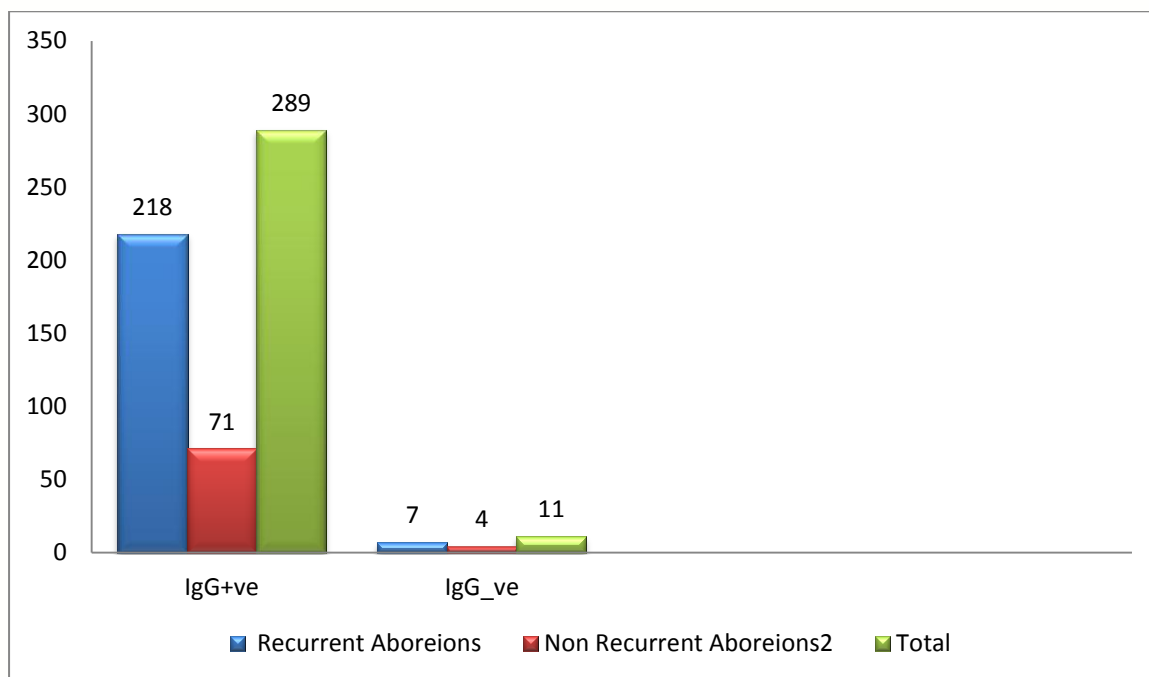


Figure 2: Result of ELISA CMV IgG

Table 2: Result of ELISA CMV IgM

IgM Status	Recurrent Abortions	Non Recurrent Abortions	Total	Percentage %
IgM+ve	4	2	6	2%
IgM -ve	117	177	294	98%

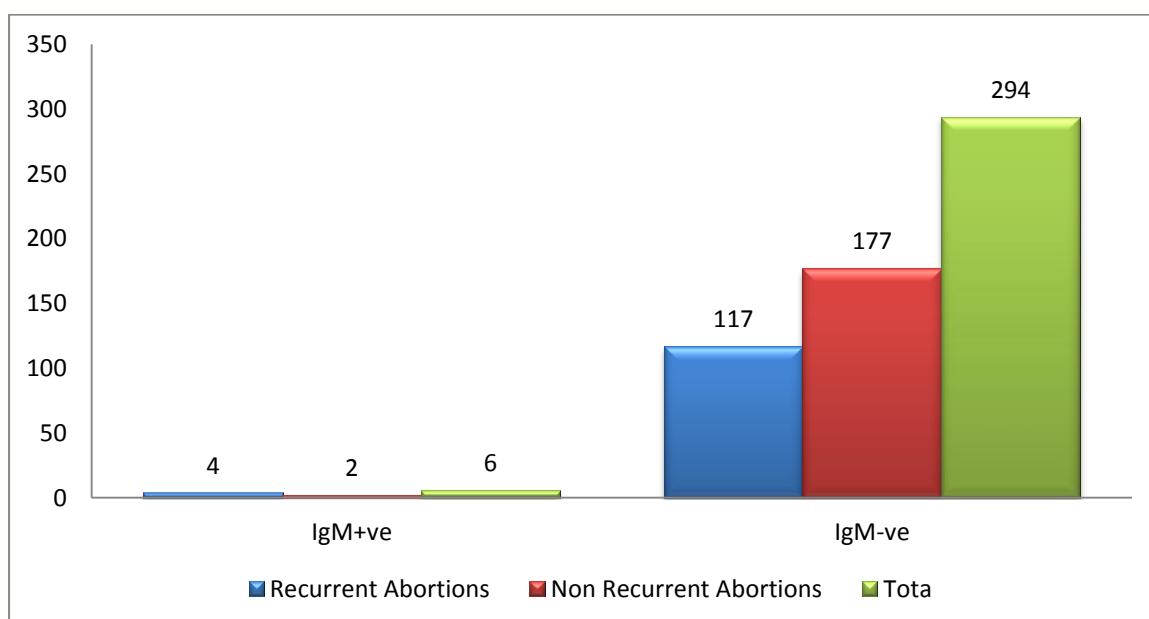


Figure 3: Result of ELISA CMV IgM

4. Discussion

Cytomegalovirus (CMV) is a linear, double-stranded DNA virus with an icosahedral capsid, CMV also known as HHV-5 member of the Herpesviridae and is so named for the enlarged cells produced by active infections, these cells are characterized by the presence of foreign matter, especially in the nucleus (14). Human cytomegalovirus (HCMV) is abundant pathogen in humans, infecting over 50 % of the world population (15). The number of women who were detected as positive by use of ELISA CMV IgG test were 289 cases (218 women with history of recurrent abortions and 71 with no history of recurrent abortions) these positive cases represent 96.3 % from total study samples, and the number of women who were detected as positive by use of ELISA CMV IgM test were 6 cases, these positive cases represent 2 % from total study samples. There are several studies that agree with my result such as : Salih (2013) in Sulaimani mentioned that the majority of tested women were positive for IgG 90.2% (167/185) and the percentage of CMV-IgM positive was 9.18 % (17/185), (16). In Iran results of 15 studies with total samples of 5253 persons from 2008 to 2017 were combined and meta-analyzed the prevalence rate of CMV- IgG among women was estimated 90%, and the prevalence rate of CMV-IgM among women was estimated 0.06%. (17).Zhang in China, the immunity against CMV for 527 pregnant women reported to be 98.7% CMV IgG positive, and the prevalence of CMV IgM+ was 0.9% (18).In Turkey, research of cmv for 600 women, 97.3% (584/600) of them were anti-CMV IgG antibody positive, while 1% (6/600) were positive for anti-CMV IgM (19). CMV total IgG antibodies were found in 92.1% in Saudi Arabia (20). In Palestine, the anti-CMV IgM was 6% positive among pregnant females, 1954 Palestinian women records which were reviewed and analyzed statistically from 2000-2005 (21). Although there are other studies that disagree with my results of IgG as study was performed in Baghdad at 2014 which detected the percentage of IgG was higher than IgM, 85% and 10% respectively among aborted women, 89% (72/81) IgG positive and 11% (9/81) in primary abortion women, 80% (57/71) IgG positive and 8% (6/71) in recurrent abortion women (22). Hamdan *et al.*, in 2011 studied cmv in 231pregnant women in sudan and found that 72.2% (167/231) were CMV-IgG positive and 2.5% (6/231) were CMV-IgM positive) (23) . Study in Iran by Bagheri *et al.* ,2012 the immunity against CMV for 240 pregnant women 72.1% were positive for CMV IgG, and 2.5% were positive for CMV IgM (24) . Sofy *et al* in Egypt, the immunity against CMV for165 pregnant women, CMV IgG positive 100% (165/165) and CMV IgM positive 80% (132/165) (25)

Conclusion

Our findings indicate that

- 1-CMV infection is a common in our local population and ELISA used for diagnosis which considered as a sufficient method in most cases. This high sero prevalence reflects the low hygienic standards and practices on our part.
- 2- CMV can lead to substantial damage to the fetus and as the damage done in utero cannot be reverted, control of intrauterine CMV infection is important. Hence, prevention of CMV infection is essential by a screening of pregnant women, to reduce the fatal outcome of the pregnancy occurring due to the CMV infection.

Recommendation:

All pregnant women, especially with bad obstetric history, should be screened for the presence of CMV infections as well as, screening against other maternal infection to exclude any congenital infection such as (TORCH) is mandatory.

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