

## **Sero-prevalence of anti- CMV- IgM and anti -CMV- IgG in Iraqi Aborted Women Infected with Human Cytomegalovirus in Nasiriyah city.**

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### **الخلاصة**

ترتبط العديد من الاصابات الفيروسية مع الإجهاض مثل الاصابة بفايروس المضخم للخلايا. CMV اذ غالبا لا تظهر علامات سريرية لذلك التشخيص يعتمد في المقام الأول على الاختبارات المصلية وهي الامتزاز المناعي المرتبط بالأنزيم (ELISA) للكشف الكلوبولين المناعي (IgG and IgM) في مصل الدم للنساء الحوامل. أجريت هذه الدراسة في مستشفى بنت- الهدى للفترة (شهر نيسان ٢٠١٥ الى شهر حزيران ٢٠١٥). حيث جمعت خمسون عينة مصل امرأة مجهزة ومن ثم اختبارها باستخدام ELISA للكشف عن مضادات CMV-IgM و CMV- IgG.

عدد الإجهاض كان اكثر حدوثا في المجموعة الثانية الذين تتراوح أعمارهم بين (20-30) سنة. تم الكشف عن CMV-IgM الكلوبولين المناعي الأجسام المضادة المحددة في 3 حالات مرضية (6%) من 50 مصل امرأة مجهزة، في حين أن الأجسام المضادة CMV- IgG حددت بنسبة 46% (23 عينة). هذه النتيجة ذات دلالة إحصائية معنوية عند مستوى معنوية ( $P < 0.05$ ).

نتائج الفحص المصلي الموجب كانت عالية (عن الفايروس المضخم للخلايا (CMV) ويحدث بشكل كبير في النساء مع الإجهاض في الجزء الاول من الحمل.

### **Abstract**

Many viruses infections are associated with abortion as cytomegalovirus infection. CMV is almost asymptomatic there for, diagnosis depends primarily on serological tests namely Enzyme linked immunosorbent assay (ELISA) to detect immunoglobulin M and G (IgM, IgG) in serum of aborted women. This study was carried out in Bent- Al Huda hospitals for the period (April 2015 to June 2015).

A number of 50 aborted women serum collected during 2015. Serum samples were collected and then tested by ELISA for detection of anti-CMV IgM and IgG antibodies. The number of abortion more incidences in second group aged (20 to 30 years). CMV specific IgM antibody was detected in 3 patients (6%) of the 50 aborted

women ,while the specific IgG antibody detected in high percentage 46% in 23 samples. these result was statistically significant ( $P<0.05$ ) .Seropositivity results for cytomegalovirus (CMV) is highly occurrences in women with first trimester of gestation.

**Key words:** cytomegalovirus, ELISA, abortion.

## **Introduction**

Viruses are the smallest infectious agents (ranging from about 20 nm to about 300 nm in diameter) and contain only one kind of nucleic acid (RNA or DNA) as their genome (1). The nucleic acid is encased in a protein shell, which may be surrounded by a lipid-containing membrane. The entire infectious unit is termed a virion. Viruses are inert in the extracellular environment; they replicate only in living cells, being parasites at the genetic level. The viral nucleic acid contains information necessary for programming the infected host cell to synthesize virus-specific macromolecules required for the production of viral progeny (23).

During the replicative cycle, numerous copies of viral nucleic acid and coat Proteins are produced. The effect of virus infection on host cell may have little or no effect on the host cell or may result in cell damage or death. Viruses are able to infect unicellular organisms such as mycoplasmas, bacteria, and algae and all higher plants and animal (4,5).Cytomegaloviruses are Cytomegalovirus belongs to the family herpesviridae of herpesvirinae subfamily(6,7).

In1986 search Primary CMV infection occurs in low percentage less than2% of all pregnancies and may be transmitted to the fetus in high percentage reach to 40% .The factors responsible for transmission to the fetus and severity of congenital CMV infection are not well understood.(8, 9).While in recent search Cytomegalovirus (CMV) is the most common cause of congenital infection and complicates approximately 1% of all live births. Primary maternal CMV infection carries a 30% to 40% risk of vertical transmission to the fetus (10, 11, 12).

## **Materials and methods**

### **Samples**

Fifty specimens were collected from women with abortion from Bent Al-huda, Thi-Qar, Iraq. The blood samples were clot and then, the serum was collected by centrifugation at 4000 rpm for three minutes. The serum was stored in deep freeze at - 20 °C until used. Detection of CMV specific (IgM and IgG) antibodies by ELISA test. Cytomegalovirus IgM (CMV IgM and IgG) ELISA Kit from (Askulisa Company).

**Assay procedure:** according to Askulisa Company

## **Results**

The objectives of this study were to determine the presence of CMV infection in aborted woman and determines of CMV percentageas causative agent of abortion in Nassiyria city-Iraq. According to the result present the abortion that occurs in

different period of age of pregnant women with high occurrences especially between 20-30 years old (44%) (Table 1).

**Table 1: The abortion percentage versus to age.**

Age ( year)	No. abortion	Percentage
16 - 20	17	34%
20 - 30	22	44%
30-40	11	22 %
Total	50	100%

Also this study showed the abortion happened in different period of pregnancy stage in human with high occurrences especially first trimester 47( 94%) lower 0 (0%) see table 2.

**Table 2: The abortion percentage versus to pregnancy stage.**

Abortion stage	Abortion case no.	Percentage
First trimester	47	94%
Seconded trimester	3	6%
Third trimester	0	0%
Total	50	100%

In ELISA result of serum samples, out of 50 tested three (6%), were positive for CMV IgM antibodies indicating serological evidence of exposure to CMV infection. Four serum samples, out of 50 (8%), were equivocal (Table 3).

**Table3: CMV IgM antibodies results by ELISA test.**

Results Sample	IgM +ve	percentage	IgM -ve	percentage	IgM equivocal	percentage
Serum	3	6 %	43	86 %	4	8 %
total	50					100%

In ELISA result 23 serum samples, out of 50 tested (46%), were positive for CMV IgG antibodies indicating serological evidence of exposure to CMV infection. While zero serum samples, out of 50 (0%), were equivocal (Table 4).

**Table4: CMV IgG antibodies results by ELISA test.**

Results Sample	IgG +ve	percentage	IgG -ve	percentage	IgG equivocal	percentage
Serum	23	46 %	27	52 %	0	0 %
total					50	100%

**The result is significant at  $p < 0.05$**

### Discussion

In Iraq CMV infection is endemic in (2002), the prevalence rates of human cytomegalovirus IgM and IgG in non-pregnant women have been reported to be 1% and 84% respective while in pregnant women from 2.5% to 90%. ( 13). Intrauterine infections have been associated with congenital abnormalities, intrauterine growth retardation and intra uterine death of the fetus, also sequelae such as developmental delay, blindness and deafness of the infected child. Cytomegalovirus (CMV) infection during pregnancy is more hazard than other infections, because of virus reactivation during the child bearing age and be transmitted to the fetus inspite of maternal immunity (14).

The number of abortions is highly at the age group (20-30) years compared with the age group (30-40). The result showed the titer of IgG is higher at all age group this indicates that cytomegalovirus infection is usually latent with potential for reactivation and this in different with reference (15).

ELISA results of this study agreement with references. Immune response to Infection more than 90% of CMV infections in immunocompetent adults and pregnant women are asymptomatic; detection of CMV antibodies is the most used in approach to identify CMV infection. The presence of serum anti-CMV IgM antibody was diagnosed evidence of primary or acute CMV infection in high percent (6%). While in another study the anti-CMV IgM detected in high prevalence in 21% in Baghdad. Also detected in neighbor of countries of Iraq in 3.1%. (16, 17)

Measure of immunoglobulin G is important as CMV IgG antibody is produced in previous infection and lead to 50 to80 % development countries. In present study showed the high prevalence of IgG antibodies 46%, this agreed with( 18) who reported the prevalence of IgG antibodies 50%. Also it was lower than other African countries as 96% in Egypt(18).

Increasing levels of CMV-specific IgG antibody over time is an impractical approach for distinguishing primary from non-primary CMV infection; most patients already show high levels of IgG antibody in the serum sample 19.

### Conclusion and Recommendation

This study showed the high prevalence of CMV infection 6% and 46% among aborted women. Routine screening for CMV should be introduced for 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 (S TO R CH) test. Further research is needed.

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