

**POTENTIAL DISTRIBUTION OF HUMAN
CYTOMEGALOVIRUS IN AL-FURAT AL-AWSET
AREA of Iraq**

Received : 4/9/2013

Accepted : 16/1/2014

Abbas Shakir Jwad Al-muhanna Enass Kareem Al- muhanna
Collage of science-University of Kufa Technical institute-Diwanyia

Abstract:

A total of 522 patients suffering from abortion or another genital tract problem were studied to determinate the role of cytomegalovirus in causing abortion in women suffering from frequent abortion, dependent on increasing the level of IgG and IgM antibodies in serum of patient. 274 (52.4%) gave positive results, versus 248 (44.6%) gave negative results. (26%) in Karbala governorate (13%) in Al-Najaf, and (13.4%) in Al-Diwanyia. Human cytomegalovirus was detected in 261 (93.3%) of female versus 13(6.7%) in male.

The highest number of CMV infection was appear in age between (25-30, 20-25 and 20-25) accounted 38 (7.3%) in Karbala, 23 (4.4%) in AL-Najaf governorate and 19(3,6%) in AL-Diwanyia respectively

Introduction

Cytomegalovirus is a member of human family herpes virus, belong to subfamily betaherpesvirinae. , the common characteristics of the family members is that they can cause latent infection, the cytomegalovirus designated as human herpes virus 5 (HHV-5), the virus is the largest member of herpes virus family, with double-stranded DNA genome of more than 240 Kbp capable of encoding more than 200 potential protein products (1).

Human cytomegalovirus (HCMV) is found throughout all geographic location and socioeconomic group and infect between 50% to 80% of adults in the United States and 40% wold wide. Human Cytomegalo virus (HCMV) is more wide spread in developing countries and in communities with lower socioeconomic state and represents the most significant viral cause of birth defects in industrialized countries. (2).

The virus seems to have a large impact on immune parameters in later life and many contribute to increased morbidity and eventual mortality, most healthy people who are infected by HCMV after birth have no symptoms (10).

HCMV infection is important to certain high-risk groups, major areas of risk of infection include pre-natal or post natal infants and immune compromised individuals. (2).

Transmission of HCMV from person to person through body fluids, infection requires close intimate contact with a person excreting the virus in the saliva, urine, or other body fluids. CMV can be sexually transmitted and can also be transmitted via breast milk, transplanted organs, and rarely with blood transfusion(3).

HCMV is one of the TORCH (Toxoplasmosis, Rubella, Herpes simplex, and Cytomegalo virus) infections that lead to congenital abnormalities, congenital HCMV infection occurs when the mothers suffers a primary infection (or reactivation) during pregnancy period(3)

The presence of maternal antibody to CMV before conception provides substantial protection against intrauterine transmission of the virus and severs fetal infections. the protection, however, is incomplete, and congenital CMV infection may follow recurrent maternal infection (7)

Although CMV affects most cell types, but it has a special affinity for epithelial cells, ependymal cells, lining the ventricles, the organ of corh, and the neurons of the eighth cranial nerve (9)

Congenital CMV infection can be diagnosed by isolation of the virus from the urine or saliva within the first three weeks of life; this can be accomplished by traditional virus culture methods which may take one to two weeks to obtain a result or rapid culture method (shell vial assay). (10).

Serological diagnosis of CMV infection can be performed by testing for CMV specific IgM and IgA or testing for a significant rise in CMV specific IgG (10)

The presence of CMV – specific IgM in cord blood or in the infant s blood within the first three weeks of life suggests the diagnosis of congenital CMV infection. (9).

Congenital CMV infection should be distinguished from another congenital infection such as, toxoplasmosis, rubella, herpes simplex and syphilis; such distinction can be done both clinically and serologically(1).

Materials & methods:

--Data collection:

The information of 522 patients suffering from abortion were collected from many hospitals and private laboratory in three governorate of Al-Furat middle area (272) from Karbala, (137) from Al-Najaf, and (113) from Al-Diwanyia. 35 (6.7%) were collected from males, and 428(81.9) from females.

--Determination of CMV cases;

The serum of 522 patients were suspected infected with CMV were obtained in order to detect the presences and levels of IgG IgM or both specific for cytomegalovirus, using kit [CYTOMEGALOVIRUS(CMV) IgG ENZYME IMMUNOASSAY TEST KIT(T-BC-1089)] was prepared for this purpose.

The titer of cytomegalovirus immunoglobulin IgG, IgM were measured by Enzyme-linkage Immunoassay (ELISA) according to manufacturer's instructions, and determined automatically by antigen-antibody colorimetric reaction.

Result and discussion:

Cytomegalovirus is one of the infections that lead to congenital abnormalities (4). Our study was attempted to survey the spreading of CMV between women during maternal viremia, maternal viremia is more occur with primary than with recurrent infection (4).

Cytomegalovirus is more wide spread in developing countries and it represented the most significant viral cause of birth defect in industrialized countries (5).

Thus 522 patient (487) female and (35) male were tested to investigated the role of virus in abortion, the results reflected that 274(52.5%) gave positive results for

detection of CMV as results of specific agglutination between antibody in the serum of patient and antigen kit (Cytomegalovirus antigen).

The positive results were represented by 136 (26%) from cases of Karbala governorate ,68 (13%)from AL-Najaf governorate and 70 (13.4) from Diwanyia governorate(table-1).

Table (1): Distribution of CMV cases in Al-Furat Al-Awset governorate

Governorate	Total	Male			Female		
		Pos.	Neg.	Bor.	Pos.	Neg.	Bor.
Karbala	272	7	7	1	129	114	14
Najaf	137	3	8	--	65	61	--
Diwanyia	113	3	6	--	67	37	--
Total	522	13	21	1	261	212	14

The study results indicated that 13(2.5%)case of 35(6.7%) male cases were infected with

CMV virus , versus 261(50%) of female were infected with the virus (table 2).

Table (2): Effect of sex on distribution of CMV

Governorate	Total	Positive %	Negative %	Border
Karbala	272	136 (26%)	121 (23.2%)	15
Najaf	137	68 (13%)	69 (13.2%)	---
Diwanyia	113	70 (13.4%)	43 (8.2%)	---
Total	522	274 (52.4%)	233 (44.6%)	15

Border : the titration of IgG and IgM =1

Congenital CMV infection result from trans placental transmission of the virus during maternal viremia,the major areas of risk of infections include prenatal and post natal infection (4).

From the calibration between age of patients and frequent of cases infection , the results pointed out that the highest percentage of infection 38 positive cases (7.3%)was recorded in aged between 25_30 years in Karbala , where heights percentage of infection in Al Najaf and Al -Diwanyia was in 20 _25 years in 23 positive cases(4.4%)and 19(3.6) infection cases respectively (Table 3,4 and 5).

Table (3): Effect of age on distribution of CMV in Karbala governorate

Age	Total	Positive	Negative	Border
15 – 20	53	32	19	2
20 – 25	59	27	25	7
25 – 30	71	38	31	2
30 – 35	52	26	22	4
35 – 40	27	9	18	--
40 – 45	10	4	6	--
45 – 50	0	0	0	0
Total	272	136	121	15

Table (4): Effect of age on distribution of CMV in Al- Najaf governorate

Age	Total	Positive	Negative	Border
15 – 20	24	15	9	--
20 – 25	39	23	16	--
25 – 30	21	10	11	--
30 – 35	25	15	10	--
35 – 40	15	3	12	--
40 – 45	10	2	8	--
45 – 50	3	0	3	--
Total	137	68	69	--

Table (5): Effect of age on distribution of CMV in AL-Diwanyia governorate

Age	Total	Positive	negative	Border
15 – 20	20	14	6	--
20 – 25	28	19	9	--
25 – 30	13	5	8	--
30 – 35	19	14	5	--
35 – 40	11	5	6	--
40 – 45	8	6	2	--
45 – 50	1	0	1	--
Less than 5 years	13	7	6	--
Total	113	70	43	--

The study results revealed that 32 (6.1%) case of CMV infection of age 15 _ 20 years was detected in Karbala, 15 (2.8%)case in Al Najaf and 14 (2.7%) cases in Al Diwanyia.

From the results , the abortion was occur in 34cases (12.7%)from total 274 cases of CMV infection in compare with 136(26%) a abortion were occur due to another agent such as toxoplasma , rubella and other (table 6).

(3) was recorded in his study that the HCMV is one of the TORCH (toxoplasmosis, Rubella, Herpes simplex and Cytomegalovirus) infection that lead to congenital abnormalities ,and the congenital HCMV infection occurs when the mothers suffer a primary infection or reactivation infection during pregnancy period .

Our study was agreement with (7) when pointed out that the outcome ratio in the United Kingdom (UK) was between (10-15%) while in our survey the outcome ratio (12.7%)in the available recorded cases suffering CMV infections .

Table (6): compare between (CMV) with other abortion agents

Age	Total	Total Positive. for CMV	Abortion due to:	
			CMV	Toxoplasmosis & Other
15 – 20	97	61	7	29
20 – 25	126	69	9	40
25 – 30	105	53	7	25
30 – 35	96	55	7	19
35 – 40	53	17	3	18
40 – 45	28	12	1	5
45 – 50	4	0	0	0
Total	509	267	34	136

Note: there are (13) cases from infants are not recorded in this table, which (7) are positive versus (6) negative.

References :

- 1--Adler S.P.,**(1992). Cytomegalovirus and pregnancy. *Obstet. Gynecol*; 4: P (670-675).
- 2--Alford C.A.,** Stagno S., Pass R.F. and Britt W.J.,(1990). Congenial and prenatal infections. *Clinc. Viro*; 12: P (745-753).
- 3--Boppana S.B.,** Fowler K.B., Britt W.J., Sango S. and Pass R.F.,(1999).Symptomatic congenital cytomegalovirus infection infant born to mother with preexisting immunity to cytomegalovirus . *Med. Micro*; 104: P (55-60).
- 4--Boppana S.B.,** Rivera L.B., Fowler K.B, Mach M. and Britt W.J.,(2001). Intrauterine transmission of cytomegalovirus to infant of women with preconception immunity. *Engl. Med*; 344: P (1366-1371).
- 5-- Britt W.J.** and Alford C.A., 1996.Prenatal diagnosis and management of fetal infections. *Obstet Gynecol*; 24: P (2493-2523).
- 6-- Demmler -Harrison G.J.,** 2009.Congenital cytomegalovirus public health action awareness prevention, and treatment .*Clinc Viro*; 46: P(1-5).
- 7-- Fowler K.B.,** Stango S., Pass R.F., Britt W.J., Boll T.J. and Alford C.A.,(1992). The outcome of congenital cytomegalovirus infection in relation to maternal antibody status. *Engl. Med*; 326: P (663-667).
- 8--Hayes K.,** Symington G. and Mackay I.R., (1979). Maternal Immuno suppression and cytomegalovirus. *Aust.Med*; 9 : P (430-433).
- 9--Lazzarotto T.,** Brunella G., Marcello L., Liliana G. and Mariapaola L., (2008).The diagnosis of congenital cytomegalovirus infection. *Clinc. Viro*; 41: P (192-197).
- 10-- Munro S.C.,** Hall B., Whybin L.R., Leader L., Robertson P. and Maine G.T., (2005). Diagnosis of and screening for cytomegalovirus infection in pregnant women. *Clinc Micro*; 43: P (4713-4718).

توزيع فايروس تضخم الخلايا البشرية في منطقة الفرات الأوسط /العراق

تاريخ القبول : 2014\1\16

تاريخ الاستلام : 2013\9\4

إيناس كريم المحنة
مدرس / قسم صحة المجتمع
المعهد التقني ديوانية

عباس شاكر جواد المحنة
قسم علوم الحياة
كلية العلوم /جامعة الكوفة

الخلاصة :

شملت الدراسة 522 حالة من النساء المرضي الذين يعانون من حالات الإجهاض او مشاكل في الجهاز التناسلي لتحديد دور فيروس cytomegalovirus كمسبب للإجهاض في النساء الذين يعانون من حالات الإجهاض المتكرر. اعتمدت عملية تشخيص الفايروس على زيادة مستوى تركيز الأجسام المضادة IgM و IgG في مصل الأشخاص المصابين . تبين من النتائج إن 274 (52,4%) من الحالات أعطت نتيجة موجبة للفحص مقابل 248 (44,6%) أعطت نتيجة سالبة ، كانت نسبة الإصابة (26%) في محافظة كربلاء ، (13%) في النجف الاشرف و(13,4%) في الديوانية . كانت نسبة الإصابة في الإناث (93,3%) مقابل 13 (6,7%) في الذكور . بينت النتائج إن نسبة للإصابة كانت في الأعمار بين 25-30 في كربلاء حيث بلغت 38 (7,3) ، بينما كانت 23 (4,4%) و 19 (3,6%) في عمر 20-25 في النجف والديوانية على التوالي. (مما تبين أعلاه إن أعلى نسبة إصابة في محافظة كربلاء وأدنى إصابة في محافظة النجف وإصابة الإناث أعلى من إصابة الذكور)