

**Seroprevalence of Anti- Cytomegalovirus IgM , IgG antibodies
among pregnant women in Diyala province**
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Abstract:

Background: Primary infection caused by human cytomegalovirus (CMV) can lead to serious complications in pregnant women, especially in early pregnancy, because CMV can cross the placenta and cause both fetal and placental infections.

Objectives: This study sought to determine the seroprevalence of cytomegalovirus infection and immune status among pregnant women in Diyala province.

Subjects and methods: This study was conducted in Baquba-Diyala province for the period from November/2010 to August 2011. 92 pregnant women were chosen from those attending the primary health care centers in Baqubah. The mean age was (29.78 ± 8.155) years, with an age range (15-45) years. Anti- CMV IgM and IgG antibodies were assayed by ELISA technique using (Biokit – ELISA, Hannover-Germany) according to the manufacturers instructions.

Results: the results showed that the anti-CMV IgG, IgM antibodies seroprevalence among pregnant women was (100%), (0%) respectively .

Conclusion: It can be concluded that low risk of reactivations or reinfection with Cytomegalovirus among pregnant women.

Keyword: CMV, anti-CMV IgG, anti-CMV IgM, pregnant women.

معدل الانتشار المصلي للضدات النوعية IgM , IgG لفيروس مضخم الخلايا Cytomegalovirus بين النساء الحوامل في محافظة ديالى

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الخلاصة

تؤدي الإصابة الأولية بفيروس مضخم الخلايا (CMV) إلى حدوث مضاعفات خطيرة لدى النساء الحوامل، خاصة في مرحلة مبكرة من الحمل ذلك بسبب قابلية الفيروس الانتقال عبر المشيمة و التسبب في إصابة كل من الجنين والمشيمة ، تسعى هذه الدراسة إلى تحديد معدل الانتشار المصلي للإصابة بفيروس مضخم الخلايا (CMV) وتحديد الحالة المناعية بين النساء الحوامل في محافظة ديالى ، أجريت هذه الدراسة في مدينة بعقوبة محافظة ديالى للفترة من تشرين الثاني / 2011 إلى آب / 2012 . اختبرت 92 امرأة حامل من اللائي حضرن إلى مراكز الرعاية الصحية الأولية في مدينة بعقوبة ، كان متوسط العمر (29.78 ± 8.155) سنوات، والفئة العمرية (15-45) سنة . أجريت اختبارات الضدات النوعية IgM ، IgG لفيروس مضخم الخلايا باستخدام تقنية الاليزا ELISA (مقياسة الممنز المناعي المرتبط بالانزيم) (Biokit – ELISA, Hannover-Germany) وفقا لتعليمات الشركة المصنعة. أظهرت النتائج إن معدل انتشار الضدات النوعية IgM ، IgG لفيروس مضخم الخلايا بين النساء الحوامل كانت (100%) ، (0%) على التوالي ، تستنتج الدراسة إن هناك خطورة قليلة عند حدوث إعادة الإصابة بفيروس مضخم الخلايا بين النساء الحوامل.

الكلمات المفتاحية : فيروس مضخم الخلايا، الضدات النوعية IgM ، الضدات النوعية IgG ، النساء الحوامل

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Introduction:

Cytomegalovirus (CMV) is a genus of Herpes Viruses, in human the species is known as Human Herpesvirus 5 (HHV-5), It belongs to the betaherpesvirinae subfamily of the Herpesviridae. CMV poses an important public health because it's the most common causes of congenital malformation resulting from viral intrauterine infection, especially in early pregnancy ^[1]. Congenital infection are the result of transplacental transmission of CMV, the rate of transmission from mother to fetus is 30-40%, the risk of congenital infection is much higher during primary infection, as against 0.15% - 2.2% during reactivations or reinfection ^[2,3,4]. Many women infected previously with CMV show reactivation and being to excrete the virus from cervix during pregnancy, at the time of delivery through the infected birth canal, infants may become infected ^[5,6]. 10-15% of congenitally infected infants will have symptoms at birth including intrauterine growth retardation , microcephaly, retinitis, jaundice, hepatosplenomegaly and 20% to 30% of them will die, permanent damage 50-80% are mental retardation, deafness and blindness ^[7,8]. The seroprevalence of CMV among women of childbearing age ranges from 35-95% in different countries ^[9]. CMV infection in Iraq ; the prevalence rates of IgM and IgG antibodies in pregnant women was 2.5% and 90% ^[10]. In Iran the rate of IgG among women less than 20 and over 40 years old was 98% and 100% respectively ^[11]. Seropositives of CMV were reported in pregnant women as 39%-94% in USA ^[12]. In southern Turkey the rate of anti-CMV IgG antibodies among pregnant women was 95% ^[13].

Subjects and methods:

The present study was conducted in Baqubah-Diyala province during the period from November /2010 to August 2011. . The study group was consist of 92 pregnant women who were attended the primary health care centers in Baqubah. The mean age was (29.78 ± 8.155) years, with an age range (15-45) years. Information on age, month of pregnancy, residence, educational levels, was record by personal interview. 3 ml of blood was drawn from pregnant women in plane plastic test tubes by vein punctures and separated by centrifugation at 3000 rotation / minute for 5 minutes, sera were stored frozen until the serological examination were performed on them. Anti- CMV IgG and IgM antibodies was detected by Enzym – Linked Immunosorbant Assay (Biokit – ELISA, Hannover-Germany). The technique were performed according to the manufacturers instructions.

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Results:

The mean age of participants was (29.78 ± 8.155), the mean of trimesters of gestational was (2 ± 0.86), table (1) .The results revealed that the anti-CMV IgG seropositivity rate among pregnant women was (100%), while anti-CMV IgM seropositivity rate was negative, table (2).

Table 1: Baseline data of pregnant women

Mean age	(29.78 ± 8.155)	
Mean of trimesters of gestational	(2 ± 0.86)	
Resident	No	%
Urban	54	58.6%
Rural	38	41.3%
Total	92	100%
Educational level	No	%
Illiterate	4	4.3%
Primary	29	31.5%
Secondary	35	38.0%
High	24	26.0%
Total	92	100%

Table (2): Seroprevalence of anti anti-CMV IgM, IgG antibodies among pregnant women

Pregnant women	IgM				IgG			
	Positive		Negative		Positive		Negative	
	No.	%	No.	%	No.	%	No.	%
	0	0	29	100	92	100	0	0
Total	92		100%		92		100%	

Discussion:

It well know that primary infections causal by human CMV can lead to serious complication in pregnant women^[14]. One of the priorities of the disease control program is to provide accurate epidemiologic data through seroprevalence studies. This study south to determine sreoprevalence of anti –CMV IgM and anti –CMV IgG antibodies among pregnant women, the overall seroprevalence of anti –CMV IgM among pregnant women in Baqubah city was 0% , while the seropositivity rate of anti –CMV IgG was 100% . However variable results had been obtained by previous studies, these results are similar to the result reported in Iran in which the anti –CMV IgG seropositivity rate was 100% and no recent infection (CMV – IgM positive)^[15]. Another study showed that 125 pregnant women were tested, the anti –CMV IgM antibodies was found in 9(7.2%) and anti –CMV IgG in 105(84%)^[16]. In Turkey, the seropositivity rate of anti –CMV IgM and IgG among pregnant women were 0.7% , 96% respectively^[17]. In Cuba, the seropositivity rate of anti –CMV IgM and IgG were 2.38% , 92.7% respectively^[18]. This study is the first published report on the seroprevalence of CMV in pregnancy in our population. In this study CMV is endemic in our population and hence

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the most common infection with CMV, therefore low risk of reactivations or reinfection with CMV in pregnant women because they have antibodies against the virus.

References:

1. Gaytant, M. A. ; Steegers, E. A. ; Semmekrot, B. A. ; et al. (2002). Congenital Cytomegalovirus infection : review of the epidemiology and outcome. *Obestet. Gynecol. Surv.* 57: 245-256.
2. Kenneson, A. and Cannon, M. J. (2007). Review and meta – analysis of the epidemiology of conegintal cytomegalovirus (CMV) infection. *Rev.Med. Virol.* 17(4): 253-276.
3. Raynor, B. D. (1993). Cytomegalovirus infection in pregnancy. *Semin Perinatol.* 17: 394-402.
4. Levinson , W. (2008). Human Papillomavirus. In: Review of Medical Microbiology and Immunology . Levinson , W (eds). 10th Ed . The McGraw – Hill Companies , Inc. p: 264-265.
5. Boppana, S. B. ; Rivera, L. B. ; Fowler, K. B. et al. (2001). Intrauterine transmission of cytomegalovirus to infants of women with preceptional immunity. *N. Eng. J. Med.* 344(18): 1366-1371.
6. Brooks, G. F ; Butel, J. S. and Morse, S. A. (2007). Cytomegalovirus. In : Medical Microbiology. Brooks, G. F ; Butel, J. S. and Morse, S. A. 22nd Ed. McGraw-Hill. P: 441-445
7. Lanari, M. ; Lazzarotto, T. ; Venturi, V. ; Papa, I. ; Gabrielli, L. Et al. (2006). Neonatal cytomegalovirus blood load and risk of sequelae in symptomatic and asymptomatic congenitally infected newborns. *Pediatrics.* 117(1): 76-83.
8. Fowler, K. B. ; Stagno, S. and Pass, R. F. (2003). Maternal immunity and prevention of congenital CMV infection. *JAMA.* 289(8): 1008-11.
9. Malm, G. and Engman, E. L. (2007). Congenital Cytomegalovirus infection. *Seminars in Fetal and Neonatal Medicine.* 12(3): 154-159.
10. Ali, H. Y. M. ; Yaseen, S. A. and Najem, S. N. (1992). Prevalence of Cytomegalovirus infection in childbearing age women in mosul. *Jordan. Medical. Journal.* 26: 53-8.
11. Demler, G. J. ; Baffon, M. and Schimbor, R. A. (1998). Detection of Cytomegalovirus in urine from newborns by using polymerase chain reaction DNA amplification. *J. Infect. Dis.* 158:1177-1184.
12. Colugnati, F. A. ; Staras, S. A. ; Dollard, S. C. And Cannon, M. J. (2007). Incidence of CMV infection among the general population and pregnant women in United State. *BMC. Infect. Dis.* 7: 71.
13. Ocak, S. ; Zeteroglu, S. Ozer, C. et al. (2007). Seroprevalence of Toxoplasma gondii, Rubella and Cytomegalovirus among pregnant women in southern Turkey. *Scan. J. Infect. Dis.* 39: 231-4.
14. Murno, S. C. ; Hall, B. and Whybin, L. R.(2005). Diagnosis of screening for CMV infection in pregnant women. *J. Clin. Microbiol.* 43:4713-8.
15. Siadati, A. ; Noorbakhsh, S. ; Ghazi, F. ; et al. (2002). Cytomegalovirus infection in primiparous pregnant women and their neonates. *Acta. Medica. Iranica.* 40(3): 136-139.

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16. Saraswathy, T. S. ; Az-Uilusna, A. ; Nurul, R. ; et al. (2011). Cytomegalovirus infection in pregnant women and associated role in obstetric complications : Apreliminary study. Southeast. Asian. J. Trop. Med. Public. Health. 42(2): 320-322.
17. Tamer, G. S. ; Dundar, D. And Cahskan, E. (2009). Seroprevalence of Toxoplasma gondii, Rubella and Cytomegalovirus among pregnant women in Western region of Turkey. Clin. Invest. Med. 33(1): 43-47.
18. Kouri, V. ; Correa, C. ; Verdasquera, D. ; Martines, P. ; Alvorez, A. et al. (2010). Diagnosis and screening for Cytomegalovirus infection in pregnant women in Cuba as prognostic markers of Congenital Infection Newborns: 2007-2008. Ped. Infect. Dis. J. 29(12): 1105-1110.

