Letter to the editor

Seroprevalence of cytomegalovirus infection among pregnant women in Eastern Iran

Dear Editor,

Human cytomegalovirus (CMV) is the most common cause of congenital infection, with morbidity and mortality at birth.[1–5] Usually, there are no clinical symptoms for CMV during primary infection, reactivation, and re-infection with a different CMV strain, but infected individuals may transmit the virus via body fluids such as saliva, blood, cervical secretion, semen, and urine.[1–4] The risk of intrauterine infection largely depends on the time of maternal infection during pregnancy – it is lowest at the time of conception, and is increased in the third trimester.[4] Some studies concluded that CMV infection lead to miscarriage and stillbirth.[4,5]

The need for diagnostic tests at all stages of gestation has always been the subject of debate due to the insufficient evidence of congenital abnormalities in re-infection. Thus, the CMV infection diagnostic test is still not considered part of routine prenatal tests.[4,5] Currently, no national screening test for CMV infection is available at all stages of pregnancy in Iran.

Considering the importance of intrauterine CMV infection transmission and its complications, it is necessary to study the prevalence of CMV infection in pregnancy with regional interests. The aim of this study was to determine the seroprevalence of CMV infection in a pregnant population in Eastern Iran. The effects of age, residency, abortion, parity,

Table 1 – Distribution of CMV seroprevalence regarding the studied variables.					
Variables	Total participants n (%)	CMV-IgG⁺ CMV-IgM⁻ n (%)	CMV-IgG⁻ CMV-IgM⁻ n (%)	p-value	CMV-IgM⁺ n (%)
Mean age (years)	28.72 ± 5.45	28.04 ± 5.26	27.28 ± 5.90	p = 0.326	23 ± 2.19
Age (years)					
< 30	153 (63.7%)	101 (68.7%)	46 (31.3%)	p = 0.242	6 (3.4%)
≥ 30	87 (36.2%)	66 (75.59%)	21 (24.1%)		.
Education					
Elementary	19 (7.9%)	14 (73.3%)	5 (26.3%)	p = 0.117	.
High school	79 (32.9%)	57 (75. %)	19 (25.0%)		3 (3.8%)
University/College degree	80 (33.3%)	51 (64.6%)	28 (35.4%)		1 (1.3%)
> University/College degree	62 (25.8%)	45 (75.0%)	15 (25.0%)		2 (3.2%)
Residency					
Urban area	176 (73.3%)	114 (67.1%)	56 (32.9%)	p = 0.017	6 (3.4%)
Rural area	64 (26.7%)	53 (82.8%)	11 (17.2%)		.
Previous abortion					
No	187 (77.9%)	122 (67.4%)	59 (32.6%)	p = 0.013	6 (3.2%)
Yes	53 (22.1%)	45 (84.9%)	8 (15.1%)	OR = 2.72	.
Pregnancy					
Primigravid	77 (32.1%)	50 (68.5%)	23 (31.5%)	p = 0.643	4 (5.2%)
Multiparous	163 (67.9%)	117 (72.7%)	44 (27.3%)		2 (1.2%)
Proper hand washing practices					
Rarely	4 (1.7%)	2 (50.0%)	2 (50.0%)	p = 0.000	.
Sometimes	79 (32.9%)	66 (86.8%)	10 (13.2%)		5 (6.3%)
Often	80 (33.3%)	67 (84.8%)	12 (15.2%)		1 (1.3%)
Always	77 (32.1%)	32 (42.9%)	43 (57.3%)		.

and education on the seroprevalence of the infection have also been investigated.

In this descriptive study, 240 serum samples were collected from pregnant women at the third trimester from February to April, 2011, using the ELISA method, to measure CMV IgG and IgM markers. The IgG avidity test was used for all patients who were CMV-IgM+ and CMV-IgG+ to distinguish between primary and recurrent CMV infection. All CMV-IgM+ of pregnant women were monitored until labor.

This study was approved by the Ethical Review Committee of the Islamic Azad University, Gonabad Branch, Gonabad, Iran.

In our study, the CMV seroprevalence rate was 72.1%. Among the 240 tested women, 167 (69.6%) had had a previous CMV infection and 67 (27.9%) had never been infected with CMV. The remaining six (2.5%) women were CMV-IgM+. In the latter group, four women (1.66%) had recurrent CMV infection (IgM+ and high IgG avidity) and two (0.84%) women had primary CMV infection (IgM+ and low IgG avidity).

There was significant correlation of history of abortion, residence place, and personal hygiene status with IgG seropositivity rate (Table 1). Two CMV-IgM+ subjects were faced with preterm labor and low birth weight. Due to the small number of CMV-IgM+ pregnant women, we could not draw any definitive conclusion about the consequences to pregnancy. Further studies should follow-up women with primary and recurrent CMV infection in the third trimester of pregnancy.

Failure to detect asymptomatic infected neonates, who are at the risk of complications such as sensorineural hearing loss, vision loss, and mental retardation, can have a negative effect on the development of children.[2,4] The application of a non-invasive serological assay to detect CMV infection would be advantageous for asymptomatic newborns, though it could not change the outcomes of pregnancy.

Conflict of interest

All authors declare to have no conflict of interest.

REFERENCES

1. Kenneson A, Cannon MJ. Review and meta-analysis of the epidemiology of congenital cytomegalovirus (CMV) infection. Rev Med Virol. 2007;17:253–76.
2. Dollard SC, Grosse SD, Ross DS. New estimates of the prevalence of neurological and sensory sequelae and mortality associated with congenital cytomegalovirus infection. Rev Med Virol. 2007;17:355–63.
3. Cannon MJ. Congenital cytomegalovirus (CMV) epidemiology and awareness. J Clin Virol. 2009;46S:S6–10.
4. Munro SC, Hall B, Whybin R, et al. Diagnosis of and screening for cytomegalovirus infection in pregnant women. J Clin Microbiol. 2005;43:4713–8.
5. Sotoodeh A, Jamshidi M, Farjam MR, et al. Cytomegalovirus immunity in South of Iran. Am J Infect Dis. 2010;6:8–12.

Leila Bagheri*
Department of Nursing & Midwifery, Islamic Azad University, Gonabad Branch, Gonabad, Iran

Hossein Mokhtarian, Narges Sarshar
Department of Basic Sciences, Islamic Azad University, Gonabad Branch, Gonabad, Iran

Mohammad Ghahramani
Social Development and Health Promotion Research, Gonabad University of Medical Sciences, Gonabad, Iran

Corresponding author at: Islamic Azad University, Gonabad Branch, Department of Nursing & Midwifery, Daneshgah Street, Gonabad, Iran.
E-mail address: leila.bagheri1980@gmail.com (L. Bagheri).