

**IMPACT OF TOXOPLASMA, RUBELLA, CYTOMEGALO AND HERPES SIMPLEX VIRUSES ON ABORTION
PREVALENCE IN WOMEN ATTENDING AZADI TEACHING HOSPITAL IN KIRKUK CITY-2013**

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HOSPITAL IN KIRKUK CITY-2013**

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ABSTRACT

Background: cytomegalovirus (CMV) has been described as an important etiological agent of intrauterine infection in women of childbearing age that causes congenital malformation .This infection constitutes a major economic and public health problem in the world particularly in the developing countries including the Middle East due to the high rate of morbidity and mortality especially, among pregnant women and patients.

Objective: This study was carried out to determine the prevalence of toxoplasmosis and infection among aborted women in order to establish basic knowledge for future pregnancy care.

METHOD: The study included 126 women with abortion, across sectional study performed; Serological evaluation for TORCH infections was carried out by IgG and IgM ELISA method.

Results: A total number of 126 blood samples from aborted women was collected and tested for the presence of IgG and IgM concerning CMV.101(80.2%) were seropositive while 25(19.8%) were seronegative.

Conclusion: CMV infection is more prevalent among aborted women. A previous history of pregnancy wastage and the serological reaction for TORCH infections during current pregnancy must be considered while managing BOH cases so as to reduce the adverse fetal outcome.

Introduction

The first trimester of pregnancy is an important period often fraught with complications like bleeding and pain, leading to severe apprehension in the mother 1. Pregnancy loss has been attributed to several factors involved in human reproduction. Genetic and

uterine abnormalities, endocrine and immunological dysfunctions, infectious agents, environmental pollutants, psychogenetic factors and endometriosis are most important causes 2 of spontaneous abortion. Some maternal infections, especially during the early gestation, can result in fetal loss or malformations because the ability of the fetus to resist infectious

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organisms is limited and the fetal immune system is unable to prevent the dissemination of infectious organisms to various tissues 3. The fetus and/or neonate are infected predominantly by viral but also by bacterial and protozoal pathogens. Infections with various pathogens cause miscarriage or may lead to congenital anomalies in the fetus while others are associated with neonatal infectious morbidity.

Recurrent pregnancy wastage due to maternal infections transmissible in utero at various stage of gestation can be caused by a wide array of organisms which include the TORCH complex (*Toxoplasma gondii*, Rubella virus, Cytomegalovirus, Herpes simplex virus) and other agents like *Chlamydia trachomatis*, *Treponema palladium*, *Neisseria gonorrhoeae*, HIV, etc.

The prevalence of these infections varies from one geographical area to another 5. These maternal infections are initially unapparent or asymptomatic and are, thus, difficult to diagnose on clinical grounds 6,7. Therefore, diagnosis of acute TORCH infections is usually established by demonstration of seroconversion in paired sera or by demonstration of specific IgM antibodies 8. Enzyme-linked immunosorbent assay (ELISA) for IgM antibodies against these infections single serum assays do not make a clear distinction between a recent primary and chronic infection. The tendency of specific IgM to persist for a long time even at high levels has been verified in several studies 9,10.

Cytomegalovirus (CMV) infections are widespread and usually asymptomatic; however, the virus may persist as a latent or chronic infection 11. The relatively frequent incidence and often severe disease in newborns and immunosuppressed individuals clearly establishes this agent as an important human pathogen 12,13. Of the newborn infants congenitally infected with CMV, 95% exhibit no clinically overt disease at birth 14. Of the remaining 5% of infected infants,

clinical manifestations range from severe disease with jaundice, hepatosplenomegaly, thrombocytopenic purpura, cranial calcification and growth retardation to pneumonitis, hydrocephaly or microcephaly and ocular defects 15. Infants with severe manifestations of congenital CMV infection may expire early after birth due to secondary complications; however, most survive with consequent neurological damage 12.

The prognosis for congenitally infected infants who are asymptomatic at birth must be guarded. Ten to 25% may subsequently develop hearing loss 16. Five to 10% may exhibit various degrees of mental retardation and central nervous system motor disorders 14. Surveys show the incidence of congenital CMV infection to be from 0.5 to 2.5%. Consequently, a careful documentation of the long term effects of intrauterine infection is important 17.

Prenatally infected infants start excreting CMV 3 to 12 weeks after delivery and with rare exception, remain asymptomatic 18. Postnatal CMV infections are acquired through close contact with individuals who are shedding the virus 12. CMV has been isolated from saliva, urine, breast milk, cervical secretions, and semen. Consequently, the transmission of the virus may occur through a variety of mechanisms 15,17. Sexual transmission of the virus appears to contribute to the acquisition of the virus by young adults 19. Although the age at which CMV infection is acquired varies with socioeconomic conditions, only about 10-15% of children in the United States are seropositive. By age 35 however, about 50% of the population is seropositive 12,13.

The majority of individuals contracting postnatal CMV infections remain asymptomatic 12,13. A small percentage of individuals will develop a negative heterophile-antibody infectious mononucleosis syndrome. CMV mononucleosis is characterized by fever, lethargy, and atypical lymphocytosis; whereas, in Epstein-Barr virus

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induced infectious mononucleosis, pharyngitis, lymphadenopathy, and splenomegaly are the chief clinical features 20,21.

In immunocompromised patients, CMV infections happen frequently, often from reactivation of latent infection, and may be life-threatening 12,13. These patients include allograft recipients, cancer patients, and patients with acquired immunodeficiency syndrome (AIDS) 13,22,24. Clinical manifestations of CMV disease in immunocompromised patients range from CMV mononucleosis to pneumonia, hepatitis, pericarditis, and encephalitis 13.

CMV infections may occur following blood transfusions, and the risk of infection increases with the number of donors and the volume of blood given 13. Primary infection in seronegative recipients may be contracted via blood from a seropositive donor. In seropositive recipients, a latent infection may become reactivated. Most transfusion acquired CMV infections are either subclinical or characterized by CMV mononucleosis 12,13. However, in specific groups of patients, considerable morbidity and mortality can result from a transfusion-acquired primary CMV infection. These patients are immunocompromised and include premature infants, pregnant women, cancer patients, and transplant recipients 13,23. In these patients, transfusion acquired CMV infections can be prevented by giving only blood from seronegative donors to seronegative recipients 13,23.

Aim

To study the correlate of the prevalence of TORCH particularly Cytomegalovirus infections with abortion in pregnant women in Kirkuk city

MATERIALS AND METHODS

This study was carried out in Kirkuk Governorate, north of Iraq in 2013, the duration

of the study was 5 months started in January to June and included 126 aborted women (study group), aged between 15 and 45 years, the mean age of the patients (26.9). The study done at Azadi teaching hospital, department of obstetrics and gynecology. Type of study was cross sectional study. The cases were selected randomly from patients with abortion. A questionnaire form was filled for each subject by direct interview.

Three ml of blood was taken from each patient using disposable syringes. The blood was allowed to clot in a plain tube at room temperature and then serum was separated by centrifugation at 3000 rpm for three minutes. The serum was then used for estimating serological evaluation for TORCH infections by ELIZA.

RESULTS

The current study performed in Kirkuk city for detecting the presence of CMV IgG and IgM antibodies in 126 patients, from different age groups, between 15 year and 45 year, the mean age of the patients was 26.9 year. All the patients were having history of abortion either single or recurrent.

As shown in (Table 1) 115 (87.3%) patient out of (126) were seropositive for CMV while only (16) patient (19.8) were seronegative, and this percentage of positivity for CMV indicate a high rate of infection.

While in (Table 2 and 3) We have noticed that 62 patients (49.2 %) were IgG positive, 10 patients (7.9%) were IgM positive, 29 (23%) patient were both IgG and IgM positive and only 25 (19.8 %) have negative titers.

DISCUSSION

CMV is the most common viral infection worldwide and among different age groups

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including both sexes, also its incidence has been estimated to be between 0.2-2.2% of all live births in different parts of the world²⁵.

The current study tried to determine the percentage rates of both CMV-IgG and IgM seropositivity among patients with abortion. The vast majority of CMV infection can be asymptomatic and the infected person may not suffer from the infection consequences, similar observations were observed by other researchers who noticed substantial prevalence of infection in the local population ²⁶. Infection among pregnant women can cause risks for the fetus as reported by Enders and his colleagues in 2001, ²⁷. Who reported that there is a risk for transmission of the virus to the fetus during the pregnancy.

The highest percentage rates of CMV-IgG seropositivity as observed in the current study may indicate the previous exposure of the tested women and now they are immune against CMV, especially when they were IgM-negative, these women as mentioned can be considered immune and their primary infection with CMV was assumed to have been taken place before the current pregnancy, similar conclusions were reported by other researches in 2006 who noticed that most of the tested women were had immune against primary CMV infection and these results suggested that latent CMV infection predisposes to adverse pregnancy outcomes²⁸.

Women with IgM seropositivity without positive IgG antibody were considered as acutely infected with CMV, although there was cross reactivity of about 3.3% for IgM positivity with other viral infectious including EBV, measles, herpes simplex varicella- zoster influenza vaccine as reported by Maine et al. (2000). As mentioned before these women who showed CMV-IgM positivity may be asymptomatic as pointed by other investigators²⁹. Other researchers recorded similar observations as in 2004 Lazzarotto and co-workers found that

CMV-IgM can be found frequently in the serum of normal pregnant women without any influence on the pregnancy outcome, although our findings were disagreed with observations by Lazzarotto et al. (2004), regarded to normal pregnancy, because our findings revealed that CMV-IgM seropositivity was significantly related to abortion. Different researchers indicated that primary CMV infections in any stages of pregnancy presents a risk for intrauterine infection from 30-50% but congenital infection in seropositive mothers is only from (0.2-1.5%) and that it needs more microbiological and histological confirmation³⁰. There were some tested women who showed both CMV-IgG and IgM positive results which were considered to be possibly infected with CMV during the current pregnancy or a chronic infection which can be confirmed by IgG avidity test because antibody binds to the antigen with less avidity during acute infection than chronic infection²⁶. Moreover some cases were negative for both CMV-IgG and IgM, most of these cases were immune against CMV and CMV maternal seropositivity being associated with less severe fetal involvement and maternal immunity plays a protective role in this setting³⁰, or may be non-infected with CMV at all.

CONCLUSION

This study has confirmed the significant association of infectious causes, especially TORCH and abortion. TORCH infections are considered a known causal factor, which is treatable. We can diagnose high risk pregnancy with serological tests in areas with insufficient equipment. recommendation

Recommend

that all antenatal cases with abortion be routinely screened for TORCH complex, especially CMV, as early diagnosis and

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appropriate intervention of these infections will help in proper management of these cases.

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Table 1: number and percent's of aborted patients infected with CMV.

NO. of patients	Total tested	No. of anti-CMV +ve	%of anti-CMV +ve	No. of anti-CMV -ve	%of anti-CMV -ve
126	126	101	80.2%	25	19.8%

Table 2: The overall seroprevalence to CMV (n=126)

Micro-organism	Immunoglobulin							
	IgG+ve		IgM+ve		(IgG, IgM) +ve		(IgG,IgM)-ve	
	NO.	%	No.	%	N0.	%	No.	%
CMV	62	49.2%	10	7.9%	29	23%	25	19.8%

Table 3:CMV IgG and IgM results among tested women groups.

Age groups (years)	Total No. tested	IgG +ve		IgM +ve		(IgG,IgM)+ve		(IgG,Igm)-ve	
		No.	%	No.	%	No.	%	No.	%
15-20	24	10	41.6%	4	16.6%	3	12.5%	7	29%
21-25	42	22	52.3%	1	2.4%	10	23.8%	9	21.4%
26-30	24	14	58.3%	1	4.2%	6	25%	3	12.5%
31-35	25	11	44%	3	12%	6	24%	5	20%
36-40	9	4	44.4%	0	0%	4	44.4%	1	11.1%
41-45	2	1	50%	1	50%	0	0%	0	0%