

Prevalence of Serum Antibodies to Torch Infection in Women with Bad Obstetric History Attending Tertiary Care Hospital, Gujrat.

Dr. Jay Parikh¹, Dr. Anil Chaudhary², Dr. G.U Kavathia³, Dr. Y.S Goswami⁴

¹(Microbiologist, Bhatt Laboratories, Rajkot, Gujrat.)

²(Tutor, Microbiology Dept, P.D.U Medical College, Rajkot, Gujrat.)

³(Associate Professor, Microbiology Dept, P.D.U Medical College, Rajkot, Gujrat)

⁴(Dean, Gmers Medical College, Junagadh, Gujrat.)

Abstract:

Background: The acute infections which are caused by *Toxoplasma gondii*, Rubella virus, Cytomegalovirus (CMV) and the Herpes Simplex Virus (HSV-2) during pregnancy are often associated with adverse foetal outcomes and reproductive failures. In the Indian context, the exact seroprevalence of these infections is not known due to unavailability of baseline data.

Aims: The present study was undertaken to determine the serological evidence of the acute TORCH infections in women with bad obstetric history who were in the first trimesters of their pregnancies attended RasulkhanZanana Hospital, Rajkot, Gujrat, India.

Settings and Design: This study was carried out in the RasulkhanZanana Hospital in collaboration with Microbiology dept P.D.U Medical College, Rajkot, Gujrat, India. The study population involved pregnant women with bad obstetric histories, who were in the first trimester of their pregnancy.

Methods and Materials: Total 100 Sera were collected from the women with BOH and they were tested for the presence of specific IgM antibodies against the TORCH infections by ELISA.

Results: The specific IgM antibodies were found to be positive in 16(16%) cases for toxoplasmosis, in 12(12%) cases for the Rubella virus, in 2 (2%) cases for CMV and in 2 samples (2%) for the HSV-2 infections.

Conclusions: The study showed a high prevalence of the infections which were caused by the TORCH complex amongst pregnant women with bad obstetric histories. Therefore, all the antenatal cases should be routinely screened for the TORCH infections, for carrying out early interventions to prevent foetal loss.

Keywords: Antibodies, Pregnant, Serological, Specific IgM, TORCH

I. Introduction

The maternal infections that are transmissible in utero at several stages of the pregnancy, can be caused by many organisms, of which the members of the TORCH complex, namely *Toxoplasma gondii*, Rubella virus, Cytomegalovirus (CMV), the Herpes Simplex Virus (HSV) occupy prominent positions. These infections are associated with inadvertent outcomes like multiple abortions, sterility, intrauterine foetal deaths, still births, congenital malformations and other reproductive failures, especially when they are acquired during the first trimester of the pregnancy. Since these maternal infections are initially asymptomatic and as the clinical diagnoses are unreliable, the diagnoses of these infections depend on serological evidences. The detection of the IgM antibody against TORCH is the best approach for the identification of these infections [1]. Due to the lack of a national screening programme, there is no baseline serological data regarding the presence of an antibody in the TORCH infection during pregnancy.

This study was undertaken to detect the serological evidence of the acute TORCH infections in pregnant women, by establishing the presence of the specific IgM antibodies.

II. Materials and methods

The present study was done on outdoor and indoor patients of Obstetric and Gynecology department of our hospital from November 2012 to January 2014. A total of 100 sera samples were collected from women with Bad Obstetric History, attending RasulkhanZanana Hospital, Rajkot. Patients included in our study were those with history of 2 or more consecutive abortion i.e. habitual abortion, still birth or congenitally malformed child. The approval of the institute's ethical committee was taken prior to the sample collection and an informed consent was obtained from all the patients. All the samples were tested for the TORCH infections by using sandwich and capture ELISA based commercial kits (Calbiotech Lab. Ltd, USA.) in the Serology Section of the Department of Microbiology. All the sera were assayed according to the manufacturer's instructions and the results were calculated on the basis of the cut off Activity Index (AI). The values which were 10% above the AI

were considered as positive , whereas those which were 10% below the AI were taken as negative. The values which were in between these values were considered as equivocal.

III. Results

In our study, a total of 16 cases (16%) were found to be seropositive for *Toxoplasma*, 12 samples (12%) were positive for Rubella, 02 samples (2%) were positive for CMV and samples (2%) were positive for the HSV-2 infections. The average age of the study population was 27.5 years. The seropositivity rates have been shown in [Table1]. The seropositivities for each component of the TORCH infections were seen in a majority of the cases which were in the 21-30 years age group. Mixed infections.were seen in 6 cases of *Toxoplasma* & Rubella and 1 case of Rubella & CMBV. [Table-2].

[Table 1]: Serological evidence of specific IgM antibodies against TORCH infections in pregnant women

Serological Test	Total No. Of Cases Tested	No. Of Positive Cases (%)
Toxoplasma IgM	100	16 (16%)
Rubella IgM	100	12 (12%)
CMV IgM	100	2 (2%)
HSV-2 IgM	100	2 (2%)

[Table]: Prevalence of mixed infections.

Serological Test	No. Of Positive Cases (%)
ToplasmaIgM and Rubella IgM	06 (6%)
Rubella IgM and CMV IgM	01 (1%)

IV. Discussion

This study shows the seropositivity of the TORCH infections in the pregnant women, in and around Rajkot district of Gujrat. Epidemiological studies have suggested that toxoplasmosis affects a wide variety of race groups [1]. In India, the exact seroprevalence of toxoplasmosis is not known. However, a prevalence which is as low as 5% and which is as high as 80% in adults, has been reported [2,3]. In the present study, the *Toxoplasma* specific IgM antibodies were found in 16% of the pregnant women during the first half of their pregnancies, whereas an earlier study had reported such antibodies in 12% of the women in a similar population [4]. Though a history of petbreeders and their association with toxoplasmosis could not be elicited in this study, avoiding raw or undercooked meat and unpasteurized milk and keeping away from pets, mainly cats, should be advised in these patients. The women who show seroconversion during their pregnancies should be closely followed clinically during their pregnancies.

The presence of the Rubella IgM antibodies were found in 12% of the pregnant women, Seroepidemiological studies have shown that 10-20% of the women who were in the childbearing ages in India, were susceptible to Rubella infection [6,7]. The risk of the congenital Rubella infection following a maternal infection ranged from 5% to 50% in various studies, with an increasing severity when it was acquired in the first trimester of the pregnancy [8]. But Rubella is such a mild disease, that not more than 1 in 10 cases are recorded. The paradox lies in the fact that a large proportion of the cases are subclinical and that the clinical diagnosis is unreliable. Moreover, there is a considerable variation in the prevalence of the Rubella specific IgG antibodies among the women of the child bearing ages, with studies suggesting a prevalence of a 71.3% Rubella immunity, thus leaving about 1/3rd of the women susceptible to the Rubella infection [9]. As the screening for the Rubella immunity was not done in this study, the serological diagnoses of the recent infections were made on the basis of the presence of the specific IgM antibodies. The history of the vaccination against Rubella could not be gathered from the study population, but on the basis of the socioeconomic status and the educational background, it could be presumed that most of them had not been previously vaccinated. Such cases need proper monitoring, counselling and management and a consideration for a prior routine vaccination.

CMV is a member of the herpes viruses family and it is found universally throughout all the geographical locations and in the areas of low socioeconomic conditions. A majority of these infections are asymptomatic as others and they are difficult to diagnose clinically. However, the rate of the primary infection is significantly higher in pregnant women from the low socioeconomic groups. A seropositive rate of 8.4% for the CMV IgM in women with Bad Obstetric Histories (BOH) has been reported [5].S.Gumber et.al., (Punjab 20007)) reported 7 cases of cytomegalo virus infection out of 150 women with BOH giving an incidence of 4.67%.Though reinfection with a new strain of CMV can cause infections even in the presence of detectable IgG levels [10]. This study showed a seropositive rate of 2% for the CMV specific IgM, thus indicating more women who are in the child bearing ages are already seropositive.

Neonatal Herpes which can be acquired in utero from maternal infections, is quite severe and it is associated with a high morbidity and mortality [11]. In this study, the prevalence rate of the anti HSV IgM antibodies against HSV-2, which is the most common component of TORCH, was detected to be 2%. An

antenatal screening for HSV among the pregnant women is required for carrying out effective interventions on the lifestyle practices.

This study showed that the seroprevalence of the anti TORCH complex IgM was notable amongst the pregnant women who resided in and around Rajkot, India. It has already been emphasized that knowing the epidemiology of the Torch infections is an important aspect in the development of strategies for the prevention of congenital infections [1]. Hence, it should be recommended that all the antenatal cases with BOH should be routinely screened for the TORCH complex to avoid adverse foetal outcomes. Moreover, similar studies as this one, which document the seroprevalence of the TORCH infections, should be done to create a baseline data in the country. In such a context, the development of a vaccine strategy against these infections, especially in the developing countries, should be considered.

References

- [1]. Li Z, Yan C, Liu P, Yan R, Feng Z. The prevalence of the serum anti-bodies to TORCH among women before pregnancy or in the early period of pregnancy in Beijing. *ClinicaChimicaActa*2009; 403: 212-15.
- [2]. Singh S. The mother to child transmission and the diagnosis of the *Toxoplasma gondii* infection during pregnancy. *Indian J Med Microbiol*, 2003; 21(2): 69-76.
- [3]. Yashodhara P, Ramlaxmi BA, Naidu AN, Raman L. The prevalence of the specific IgM which is caused by the *Toxoplasma*, Rubella, Cytomegalovirus and the *C.trachomatis* infections during pregnancy. *Indian J Med Microbiol*, 2001; 19: 79-82.
- [4]. Bhatia VN, Meenakshi K, Agarwal SC. Toxoplasmosis in south India- a serological study. *Indian J Med Res*, 1974; 62:1818.
- [5]. Turbadkar D, Mathur M, Rele M. The seroprevalence of the TORCH infections in women with bad obstetric histories. *Indian J Med Microbiol*2003; 21(2):108-10.
- [6]. Rubella and Pregnancy. ACOG technical bulletin number 171- August 1992. *Int J GynecolObstet*1993; 42:60-66.
- [7]. Lever AL, Ross MR, Baboonian C, Griffiths PD. The immunity to Rubella among the women of the childbearing ages. *Br J ObstetGynecol*1987; 94:208-12.
- [8]. Miller E, Cardok-Watson JE, Pollock TM. The consequence of the confirmed maternal Rubella at the successive stages of pregnancy. *Lancet*, 1982; 2: 781-84.
- [9]. Singla N, Jindal N, Aggarwal A. The seroepidemiology of Rubella in Amritsar (Punjab). *Indian J Med Microbiol*2004; 22(1):61-63.
- [10]. Boppana SB, Rivera LB, Fowler KB, Mach M, Britt WJ. The intrauterine transmission of Cytomegalovirus to the infants of women with a preconceptional immunity. *N Engl J Med* 2001;344:1366-71.
- [11]. Sebastian D, Zuhara KF, Sekaran K. The influence of the TORCH infections in the first trimester miscarriages in the Malabar region of Kerala. *African Journal of Microbiology Research*, 2008; 2: 56-59.