

Prevalence of Serum Antibodies to Torch Infection in Women with Bad Obstetrics History Attending Tertiary Care Hospital

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Abstract:

Introduction: 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.

Materials and methods: The present study was undertaken to determine the serological evidence of the acute TORCH infections in women who were in the first trimesters of their pregnancies in tertiary care hospital. 80 Sera were collected from the women with Bon 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 18(18%)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.

Conclusion: 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.

Key words: Antibodies; Pregnant; Serological; Specific IgM; TORCH

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I. Introduction

Adverse fetal outcomes such as two or more consecutive spontaneous abortions, history of intrauterine fetal death, intrauterine growth retardation, stillbirth, early neonatal death, and/or congenital anomalies indicates bad obstetric history (Kumari et al.,2011). Bad obstetric history can be caused due to varied reasons including genetic, hormonal, abnormal maternal immune response, andmaternal infection (Turbadkar et al.,2003).

TORCH is a group of prenatal infections which stands for Toxoplasmosis, Rubella virus, Cytomegalovirus infection and Herpes Simplex virus infection. These have milder impact on mother but can lead to devastating fetal outcomes. TORCH infections in pregnant mothers have the potential to cause congenital infections, abortions, intrauterine growth restriction (IUGR), still births and intrauterine deaths (IUD) (Maldonado et al.,2011; Zhiyan et al.,2009).

The severity of the infection on fetus depends upon its gestational age (Boyer and Boyer, 2004). During first trimester of pregnancy, placental barrier is formed which helps to protect the fetus from cell mediated and immunological response. These organisms are transmitted due to lack of good hygienic conditions, contaminated blood, water and soil and airborne respiratory droplet (Pizzo, 2011).

These maternal infections are initially asymptomatic. Thus, TORCH infections in pregnant women are usually established by demonstration of sero-conversion in paired sera or by demonstration of specific IgM antibodies (Daftary and Chakravarti, 1991; Newton, 1999).

The present study was undertaken to determine the serological evidence of the acute TORCH infections in women who were in the first trimesters of their pregnancies in tertiary care hospital.

II. Materials And Methods

The study was undertaken as case-control study at tertiary care Hospital, between January 2017 and December 2017. The subjects were enrolled based upon the recent history of abortions, preterm labour, intra-uterine fetal death (IUFD), stillbirth or congenital anomalies. Written informed consent was taken from the patients enrolled. A total of 80 subjects were included for the study. Group I comprised of 40 pregnant women with the age range of 18-35 years. Age matched control group of 40 healthy women with previous normal obstetric history were included in Group II. History was collected in the specially designed data collection form.3ml blood was drawn from the subjects aseptically and centrifuged for 10min x 3000 rpm. After which serum was separated and divided into 0.5ml of aliquots and kept at -20oC. The sera samples were tested for the

detecting the IgM antibodies by ELISA for Toxoplasma, Rubella, Cytomegalovirus and Herpes Simplex virus using IgM capture ELISA kit (Calbiotech Lab. Ltd, USA).

The assay was conducted according to the manufacturer’s instructions and the results were calculated on the basis of the cut off Activity Index (AI). The results were read at 450nm in the ELISA reader (Merck) and interpreted as follows:

Cut off: 0.10+ average value of negative

control

Positive: OD value equal to or greater than cut

Off

Negative: OD value less than the cut off.

Statistical analysis: The data was maintained in Microsoft excel 2010 and the test of proportions and significance was carried out using Epi-info software.

III. Results

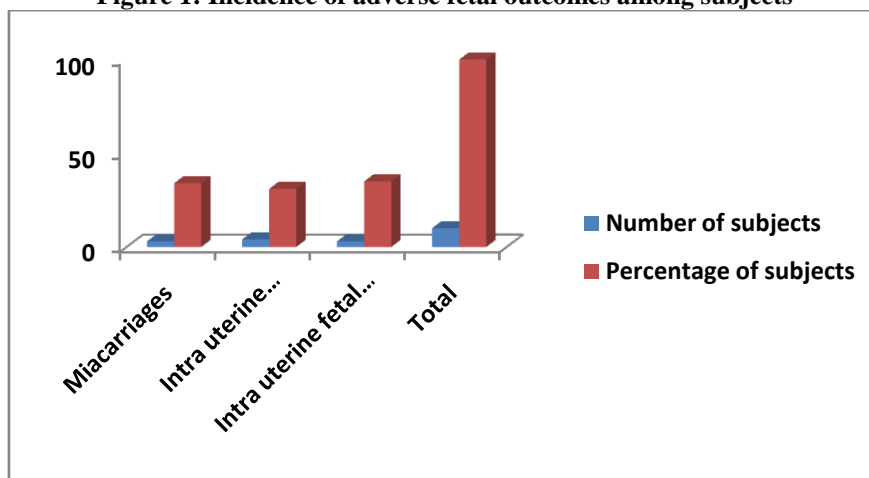
Maternal infections can have crucial consequences on fetus. In this study, ELISA testing was used to detect the TORCH infections. Prior studies have concluded that the micro-organism Toxoplasma is responsible for bad obstetric history in a wider range of race groups (Zhiyan et al.,2009). But, its prevalence has not been clearly stated in Indian population. The rupture of encysted toxoplasma in the uterus of the pregnant women has disastrous ramifications on the developing fetus such as infections, and recurrent miscarriages (Surpam et al.,2006).

Our study has revealed 18% (9/50) of IgM positive Rubella cases among subjects with bad obstetric history and about 2.85% (1/35) in healthy pregnant women. A study has reported 5-50% incidence rate of congenital Rubella when the mother is infected in the first trimester of her pregnancy (Miller et al.,1982). In a study, approximately 12% of pregnant women were found to be seropositive for rubella and about 10-20% of women in the child bearing age were susceptible for the rubella infection (Rubella and Pregnancy, 1993; Lever et al.,1987). Our study has reported a statistically significant difference between the two groups i.e., cases and controls. The infection caused by Rubella is categorized as milder i.e., found in about 1 in 10 cases.

Table 1: Comparative Results of TORCH

Serological tests	Number of seropositive in Group 1(%) n=50)	seropositive in Group 1(%) n=50)	P Value
Toxoplasma	6(14%)	0(4%)	0.025
Rubella	10(17%)	1(2%)	0.015
Cytomegalovirus	5(9%)	5(15%)	0.15
HSV	5(10%)	5(15%)	0.27
Total	26(50%)	11(36%)	0.08

Figure 1: Incidence of adverse fetal outcomes among subjects



IV. Discussion

The presence of the Rubella IgM antibodies were found in 12% of the pregnant women, Seropidemiological 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 2007) 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.

V. Conclusion

The present study has reported significant seroprevalence of IgM antibodies for TORCH organisms among pregnant women. TORCH infections have more detrimental effects on fetus than the mother such as intrauterine growth retardation, intrauterine death, early neonatal death, and congenital malformation. Hence, TORCH screening is recommended for the pregnant women especially those with the bad obstetric history. Early diagnosis helps to strategize the favorable interventions required.

References

- [1]. 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.
- [2]. 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.
- [3]. Bhatia VN, Meenakshi K, Agarwal SC. Toxoplasmosis in south India- a serological study. Indian J Med Res. 1974;62:1818.
- [4]. 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.
- [5]. Rubella and Pregnancy. ACOG technical bulletin number 171- August 1992. Int J Gynecol Obstet. 1993;42:60-66.
- [6]. Lever AL, Ross MR, Baboonian C, Griffiths PD. The immunity to Rubella among the women of the childbearing ages. Br J Obstet Gynecol. 1987;94:208-12.
- [7]. 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.
- [8]. Singla N, Jindal N, Aggarwal A. The seroepidemiology of Rubella in Amritsar (Punjab) Indian J Med Microbiol. 2004;22(1):61-63.
- [9]. 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.
- [10]. 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.

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