STUDY OF TORCH INFECTION IN PREGNANT MOTHERS WITH BAD OBSTETRIC HISTORY (BOH) IN A TERTIARY CARE HOSPITAL OF WESTERN ODISHA

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ABSTRACT

BACKGROUND

Maternal infections caused by TORCH [Toxoplasma gondii, Rubella virus, Cytomegalovirus (CMV), Herpes simplex virus (HSV)] are the major causes of bad obstetric history. The aim of this study was to evaluate the seropositivity rate of TORCH infections in pregnancy with BOH.

METHODS

The study included 42 pregnant women with unfavourable previous pregnancy. Serological evaluation for TORCH infections was carried out by IgM & IgG Enzyme Linked Immunosorbent Assay method. Data was analysed using SPSS 15.0 whenever necessary.

RESULTS

The IgM/IgG sero-positivity to T. gondii, Rubella, CMV and HSV-2 was 2.3%/16.6 %, 7.1%/59.5%, 0%/52.3%, and 4.72%/38% respectively. There were nil CMV IgM positivity and VDRL positivity.

CONCLUSIONS

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 foetal outcome.

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BACKGROUND

Toxoplasma gondii, Rubella virus, Cytomegalovirus (CMV), Herpes simplex virus (HSV), and others agents like Chlamydia trachomatis, Treponema pallidum, Neisseria gonorrhoeae, HIV, etc. are the important causes of BOH. These organisms are all together represented with an medical acronym TORCH[1]. Bad obstetric history (BOH) means previous unfavourable foetal outcome in terms of two or more consecutive spontaneous abortions, history of intrauterine foetal death, intrauterine growth retardation, stillbirth, early neonatal death, and/or congenital anomalies.[2] Mothers with TORCH infection usually remain asymptomatic but these infection lead inadvertent foetal outcome especially when acquired in first trimester. Hence diagnosis of TORCH infection in early pregnancy and also in mother of child bearing age is of utmost important. Detection of TORCH infection in mother solely depends upon serological investigation like IgM and IgG detection with the help of ELISA as most of the mothers are asymptomatic clinically. Seroprevalence of TORCH infection varies from country to country and even state to state in a country. Proper data about the seroprevalence of TORCH infection in every region is important for the clinician to detect the high-risk pregnancy and for their proper management. Keeping it in mind we have conducted a study to detect burden of TORCH infection in antenatal mother with BOH presenting to OPD of a tertiary care hospital of Western Odisha.

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METHODS

Study Setting

This study was conducted in serology department of Hitech Medical College a tertiary care hospital serving population of Western Odisha.

Study Design

A Retrospective Descriptive study.

Laboratory record of 42 sample submitted from June 2018 to December 2018 for screening of TORCH infection in antenatal mother with BOH was included in this study with informed consent. Two millilitres of blood was aseptically drawn by venipuncture into a tube containing clot activator. They were then centrifuged, and serum was separated. The levels of IgG and IgM were measured in all subjects using commercially available ELISA kits (Euroimmun, Germany), and Optical Density (OD) was measured at 450 nm in a microplate ELISA reader (Bio-Rad, USA) according to manufacturer instructions. The results were interpreted on the basis of Immune Status Ratio (ISR) index calculated by dividing the specimen OD value by the cut-off calibrator ratio. The tests were considered seropositive if ISR value is >1.11 and considered seronegative if ISR <0.9. Samples with an ISR value in between 0.9 and 1.10 were considered equivocal. Demographic information like age along with seroreactivity to TORCH infection were collected and analysed.

Statistical Analysis

Statistical analysis was performed using SPSS software version 15.

RESULTS

Sl. No.	Test	Positive	Negative	IgM & IgG Positive
1	Toxoplasma IgM	1	41	1
2	Toxoplasma IgG	7	35	
3	Rubella IgM	3	39	3
4	Rubella IgG	25	17	
5	CMV IgM	0	42	0
6	CMV IgG	22	20	
7	HSV 2 IgM	2	40	1
8	HSV 2 IgG	16	26	
9	VDRL	0	42	

Table 1. Seropositivity of Different Agents of TORCH

Age Range	20 -25	26-30	31-35	Total
Number of Mothers	25	11	6	42
Positive to Any Member of TORCH (IgG/IgM)	24 (96%)	9 (82%)	5 (83%)	38

Table 2. Age Distribution

Serum from antenatal mothers showed highest IgG positivity in case of Rubella 59.5% (25/42) followed by CMV 52.3%(22/42) and HSV2 - 38% (16/42).IgG positivity was least in Toxoplasmosis 16.6% (7/42). In case of IgM highest positivity were seen in Rubella 7.1% (3/42) followed by HSV2 4.72% (2/42) and Toxoplasmosis 2.3% (1/42). No sample was positive for CMV IgM (Table 1 & Figure 1) about age distribution 59.5% (25/42) were in age group 20-25 26% (11/42) were in age group 26-30 and 14.2% (6/42) were in age group of 31-35. Among 25 patients of 20-25 age group 96% (24/25) were positive to any member of TORCH complex (IgM/IgG). Among 11 patients of 26-30 age group 81.8 (9/11) were positive to any member of TORCH complex (IgG/IgM).Among 6 patients of 31-35 age group 83% (5/6) were positive to any member of TORCH complex. (Table 2 & Figure 2)

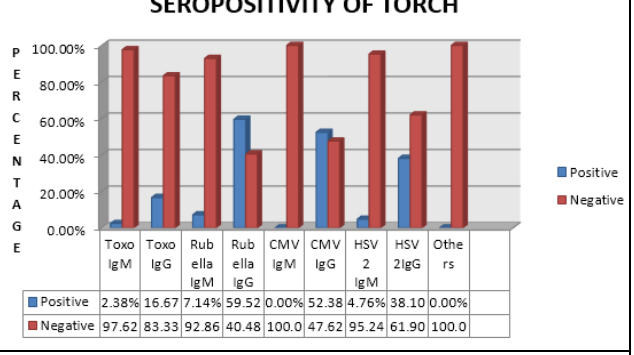

Figure 1. Seropositivity of TORCH Agent

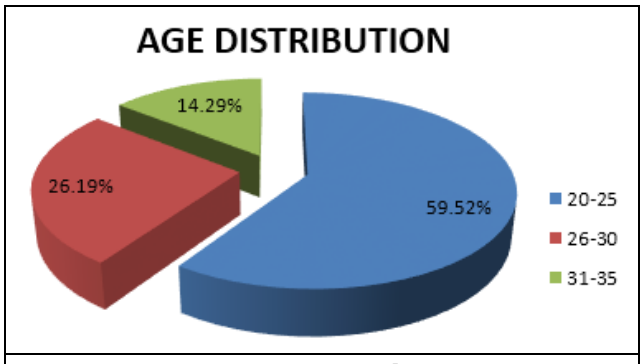

Figure 2. Age Distribution

DISCUSSION

Infection by Toxoplasma gondii, Rubella, CMV and herpes virus (TORCH) is established cause of recurrent foetal loss and BOH.

Toxoplasma gondii is an obligate intracellular protozoan parasite that cause toxoplasmosis. About one third world population is chronically infected by Toxoplasma exhibiting only nonspecific symptoms like fever malaise and lymphadenopathy. Maternal blood screening by ELISA is highly recommended as clinical diagnosis is difficult due to nonspecific nature of illness. In our study 16.6% of antenatal mother were seropositive for Toxoplasma IgG and 2.3% were for Toxoplasma IgM. This finding were very much similar to previous study in India (IgM 3% and IgG 15.33%) like Khurana et al.[3] Surpam RB et al[4] and Kaur RN et al[5] but much lower than Mathuret al.[6] (IgM 9.6% IgG 28..5%) Turbudkar et al[1] (IgM 3.6% and IgG 33.58%).Slightly higher seropositivity seen in Nepal by Poudyal et al[7] (IgM 5.76% IgG 19.23%) and in Turkish population (IgG 24.6%).[8]

Rubella is a single stranded RNA virus of Togaviridae family congenital heart defect eye defect and auditory defect are common when infection occur during organogenesis specially first 8 weeks after last menstrual period. Risk of foetal infection progressively declines after the first trimester. (Surpam et al 2006)[4] In our study Rubella seropositivity for IgM was 7.1% and for IgG it was 59.5%. This finding was higher than study by Yasodhara et al[9] (IgM 3.8%) Ballal et al[10](IgM 4.49%), Montoya et al[11](IgM 3.6%) and Ratho et al[12] (IgM 3.4%) but much lower than Mathur et al[6] (IgM 13.8% and IgG 47.98%), Turbudkar et al[1](IgM 26.8% IgG 61.3%,) Gandhokeet al.[13] (IgM 86.90%), Chopra Sashiet al.[14] (IgM 17.5%) and Fomda BA et al[15] (26.12%) Prasoonaet al.[16] had reported lower IgM seropositivity (3%) but higher IgG seropositivity (84%)

Cytomegalovirus (CMV) is an ubiquitous DNA herpes virus responsible for congenital CMV infection manifested by CMV sensorineural hearing loss or other CNS sequelae, such as mental retardation, cerebral palsy, seizures, or chorioretinitis. In our study seropositivity for IgG was 52.3% but it was nil for IgM. This finding was lower compared to another study like Prasoona et al.[16] 92%IgG 5% IgM), Mathuraet al.[6] (IgG 63.36% IgM 4.4%) Turbudkar et al[1] (IgG 91.05% IgM 8.42%) and Yasodharaet al.[9] (0.8% IgM)

Herpes simplex virus is an ubiquitous enveloped and double stranded DNA virus belonging to to the family Herpesviridae HSV2 is responsible for genital ulcer and if genital ulcer occur during pregnancy it may lead to spontaneous abortion IUGR preterm labour and congenital or neonatal herpes infection. In our study seropositivity for

HSV2 IgM was 2.38% and for HSV 2 IgG was 4.72% that was very much lower compared to Sgaieret al.[17] (IgM 10%) Prasoonaet al.[16] (IgM 3% IgG 61%) and Mathur et al[6] (IgM 4% IgG 32.05%) Turbudkar et al.[1] (IgG 33.5% IgM 3.6%) Haider et al[18] (IgM 16.8%) Chopra et al[14] (IgM 33.5%). Pradhan et al,[8] had reported 0.9% of IgG seropositivity.

In our study no sample was positive for VDRL syphilis.

CONCLUSIONS

Maternal infection with TORCH agent is a well-known cause of foetal morbidity and foetal mortality leading to bad obstetrics history (BOH). The rate of seropositivity for TORCH agent is variable from region to region in a country. Hence, base line data of TORCH seropositivity in different parts of India is crucial for better management of TORCH infection in antenatal mother and also to formulate vaccine strategy.

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