Original Research Paper

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Does TORCH Serology Have any Role in Evaluation of Patients with bad Obstetrics History (BOH)?

Medical Science

KEYWORDS : TORCH, Serology of TORCH, BOH

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ABSTRACT

Context*:The present study was conducted to evaluate the utility of detection of IgM and IgG antibodies against TORCH (Toxoplasma gondii, Rubella, CMV and HSV) infections in women with BOH in order to reduce adverse foetal outcome.****Settings and Design:*** *The study included 150 women with bad obstetric history and 75 clinically normal pregnant women with previous normal full term deliveries. Serological evaluation for TORCH infections was carried out by IgM and IgG ELISA method.****Results:*** *In BOH cases IgM seropositivity for Toxoplasma was 18.67%., Rubella 32%, CMV 12.67% and HSV 6.67%. Maximum number of cases of abortion 37.33%, IUGR 25.33%, preterm labour 10.67%, early neonatal deaths 12% and congenital malformation 8% were associated with rubella infection. Intrauterine deaths were maximally associated with toxoplasma infection. IgG seropositivity for Toxoplasma 46.67%, Rubella 56%, CMV 90% and HSV 25.33%.*

This study showed an infection susceptibility of 80% to Toxoplasma, 73.33 % to Rubella, 38.67 % to CMV and 76 % to HSV in young adult women. It was assessed by estimation of TORCH specific IgG. Cross infection with more than one of the TORCH agent was observed. ***Conclusions:*** *As the early treatment of infected pregnant women can prevent transmission of infection to foetus, early detection becomes very important.*

Introduction:

TORCH acronym stands for Toxoplasmosis, Rubella virus, Cytomegalovirus and Herpes virus infections together which have potentially overwhelming manifestations when cause transplacental infections in foetus. Though pregnancy loss has been attributed to several factors TORCH agents are one of the major causes of BOH [(1)]. The term bad obstetric history (BOH) is applied to pregnant women in whom a previous poor obstetric outcome is likely to have bearing on the prognosis of her present pregnancy. In India, pregnant women belonging to low socioeconomic group may be exposed to variety of infections due to poor environment and hygiene [(2)]. Maternal infections transmissible in utero at various stages of gestation lead to recurrent pregnancy wastage. Infections caused by TORCH Toxoplasma gondii, Rubella virus, cytomegalovirus and Herpes simplex virus is the major cause of BOH [(3)]. The rate of spontaneous abortion from foetal infection by infectious agents like TORCH group and others such as Treponema palladium is believed to range from 10-15%[(4)]. Data is scanty because of technical difficulties in isolating the organisms and the requirement for use of commercial diagnostic kits which are expensive [(2)].

Infections by TORCH agents in women are usually subclinical. The social and reproductive maladjustment because of repeated pregnancy wastages, cost of treatment and morbidity caused to the infant make TORCH group of infections a major cause of concern. The prevalence of these infections varies from one geographical area to another [(3)].

Therefore, diagnosis of acute TORCH infections in pregnant women is usually established by demonstration of seroconversion in paired sera or by demonstration of specific IgM antibodies [(5)]. This study reports the results of screening for IgM and IgG antibodies against TORCH complex in a group of patients with BOH.

Subjects and Methods:

A total of 225 women attending obstetrics and gynaecology OPD or admitted in the wards of sir J J group of hospitals, Mumbai including 150 with BOH (those with previous history of having two or more spontaneous abortions, stillbirth, intrauterine growth retardation, unexplained early neonatal death, congenitally malformed children, preterm deliveries) and 75 with previous normal full term deliveries were investigated. This study was approved by institutional ethics committee in which consecutive samples received during study period of 12 months were included. Detailed history, clinical examination, conventional laboratory investigations and findings of imaging study were recorded.

From each women 3 ml of venous blood was collected in a plain container with strict aseptic precautions. The serum was used for serological evaluation for TORCH infections. IgM and IgG antibodies for these infections were detected by classical enzyme-immunoassay supplied by Human, Wiesbaden, Germany.

Results:

The previous obstetric outcomes in 150 women with BOH included abortions 56(37.33%), intrauterine growth retardation 38(25.33%), intrauterine death 15(10%), preterm labour 16(10.67%), early neonatal death 18(12%), congenital malformation 12(8%) and mixed 5(3.33%).Maximum number of BOH cases 85(56.67%) belonged to the age group of 26-30 years.

Table 1: Results of IgG and IgM antibody assays in all patients included in the study

Serological analysis	No of BOH positive & (%)	No of controls positive & (%)	P value
Toxoplasma gondii			
IgM	28(18.67)	12(2.67)	0.0008
IgG	70(46.67)	15(20)	0.0001
Rubella			
IgM	48(32)	3(4)	<0.0001
IgG	84(56)	20(26.67)	<0.0001
CMV			
IgM	19(12.67)	2(2.67)	0.01
IgG	135(90)	46(61.33)	<0.0001
HSV			
IgM	10(6.67)	1(1.33)	0.08
IgG	38(25.33)	18(24)	0.83

Table 2: TORCH agents with different presentations of BOH
The presence of IgM and IgG is correlated with different obstetrical histories in table 2.

BOH	Toxoplasma gondii No & (%)		Rubella virus No & (%)		CMV No & (%)		HSV No & (%)	
	IgM	IgG	IgM	IgG	IgM	IgG	IgM	IgG
Abortion(56)	14 (25)	30 (53.57)	20 (35.71)	28 (50)	7 (12.5)	50 (89.29)	2 (3.57)	17 (30.36)
IUGR(38)	6 (15.88)	18 (47.37)	7 (18.47)	16 (42.11)	5 (13.16)	35 (92.11)	8 (7.97)	12 (31.58)
IUD(15)	6 (40)	6 (40)	4 (26.67)	10 (66.67)	3 (20)	13 (86.67)	2 (13.33)	4 (26.67)
Preterm labor(16)	3 (18.75)	10 (62.5)	4 (25)	9 (56.25)	2 (12.5)	15 (93.75)	3 (18.75)	3 (18.75)
Early neonatal death(18)	0 (0)	6 (33.33)	7 (38.9)	15 (83.33)	1 (5.6)	18 (100)	0 (0)	3 (16.67)
Congenital malformation(12)	1 (8.33)	3 (25)	9 (75)	9 (75)	11 (8.33)	9 (75)	0 (0)	0 (0)

Both IgM and IgG serum levels found to be significantly higher in women with BOH for Toxoplasma gondii, Rubella virus and Cytomegalovirus compared to control group.

High IgM seropositivity for mixed infection with TORCH group of agents in women with BOH was found to be statistically insignificant for infection with two or more agents in comparison to healthy pregnant women. High IgG seropositivity for mixed infections with TORCH group of agents in women with BOH was statistically significant for mixed infections with two or more agents compared to healthy women.

Table 3: IgM and IgG seropositivity in BOH (cases) and normal pregnant women (control)

Seropositivity	Study group	Toxoplasma (%)	Rubella (%)	CMV (%)	HSV (%)
IgM	Cases	18.67	32	12.67	6.67
	Control	2.67	4	2.67	1.33
IgG	Cases	46.67	56	90	25.33
	Control	20	26.67	61.33	24

In the present study, IgM seropositivity in BOH was found to be 18.67% for toxoplasma, 32% for rubella, 12.67% for CMV and 6.67% for HSV. IgM seropositivity in normal pregnant women was found to be 2.67% for toxoplasma, 4% for rubella, 2.67% for CMV and 1.33% for HSV. High seropositivity rate of IgM antibody in women with BOH is statistically significant for Toxoplasma, Rubella and CMV when compared to normal pregnant women.

Discussion:
TORCH group of agents are cause transplacental infection and are often associated with abortion, stillbirth, premature delivery and congenital malformation (BOH). There is considerable variation in the prevalence of these agents amongst the women of child bearing age in different geographical areas [(4)]

The higher seropositivity for TORCH agents as compared to healthy pregnant women has been reported in a study from central India [(3)]

Primary infection with TORCH complex in pregnant women can lead to adverse outcome which are initially asymptotic and thus difficult to diagnose on clinical grounds. It is evident that maternal infections with TORCH complex play critical role in pregnancy wastage [(3)] Therefore, in BOH cases, the serological reaction for TORCH infections during current pregnancy must be considered so as to reduce adverse foetal outcome [(3)]

In the present study, high seropositivity rate of IgG antibody in women with BOH is statistically significant for Toxoplasma, Rubella and CMV when compared to normal pregnancies.

Sebastian et al showed that general population of local area has an infection susceptibility of 32.3% to Toxoplasma, 9.6% to Rubella, 3.2% to CMV and 61.3% to HSV infection. It was revealed through the estimation of TORCH specific IgG.

In the present study the levels of IgG to various TORCH agents suggest that healthy pregnant women of local area have infection susceptibility of 80% to Toxoplasma73.33% to Rubella 38.67% to CMV and 76% to HSV. The role of Toxoplasma, Rubella and CMV is well proved here. Increased susceptibility of healthy pregnant women to Toxoplasma and Rubella further supports these observations.

As the early treatment of infected pregnant women can prevent transmission of infection to foetus, early detection becomes very important

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