



A POTENTIAL INVOLVEMENT OF TORCH INFECTION IN SPONTANEOUS ABORTIONS.

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ABSTRACT The scope of our present study was to know the TORCH IgM seroprevalence in women with bad obstetric history as an adverse reproductive outcome in current pregnancy. A total of 52 women with abortion as adverse pregnancy event in current pregnancy and a total of 86 women with full term normal pregnancy formed our control group. IgM antibodies against TORCH agents were detected by ELISA and results were expressed qualitatively as positive and negative. Evidence of TORCH infection was seen in 52 % of women. Highest percentage was for HSV infection (30.8%) followed by rubella (15.4%), CMV (11.5%), and toxoplasma (9.6%). Seropositivity was found highest in age group 21-30 years. TORCH infections during pregnancy cause foetal loss. ELISA test continues to be a useful sensitive technique as the evidence of acute TORCH infections in pregnancy.

KEYWORDS : TORCH, IgM seroprevalence, Abortion, ELISA

I. Introduction

Abortion is an issue in pregnancy wastage with its concomitant social and economic impacts. Women with bad obstetric history (BOH) comprises of previous adverse fetal consequences in term of two or more successive spontaneous abortions, early neonatal deaths, stillbirths, intrauterine fetal deaths, intrauterine growth retardations and congenital anomalies (1). Among the several other causes of foetal loss in human reproduction, TORCH agents are often responsible for abortion and the rate of spontaneous abortion from fetal infection is in range from 10-15%. Among TORCH agents, Toxoplasma gondii, globally, is the most wide spread parasite causing toxoplasmosis (2). It occurs in pregnancy as an acute infection (2). The rubella virus readily invades the placenta and fetus during gestation while CMV is the major cause of congenital infections (10). Approximately 30-50% fetuses of women who contract rubella during the first 3 months of pregnancy will be adversely affected by the virus. Primary HSV infection during first half of pregnancy is associated with increased frequency of spontaneous abortions, still births and congenital malformations (4). Infections by TORCH agents are often asymptomatic and chronic. Many sensitive and specific tests are available for the eliciting serological evidence of TORCH complex. ELISA for IgM antibodies is a sensitive and reliable test for ascertaining the seroprevalence to assess the association of TORCH infection in cases of abortions in pregnancy.

II. Materials and Methods

A total of 86 women admitted in Department of obstetrics and Gynaecology, King George Hospital, Visakhapatnam and Padmasri clinic, with spontaneous abortions and are enrolled for informed consent form. The present study was conducted from January 2016 to December 2016. Each patient who entered the study as a case of BOH had suffered two or more consecutive pregnancy losses.

II.1. TORCH testing using ELISA

After obtaining consent from each woman, 3-4 mL of venous blood was collected in a plain vacutainer. The samples were centrifuged and collected serum. Thus obtained serum was used for serological evaluation of TORCH infections. TORCH IgG and IgM antibodies were detected from the serum by ELISA test kit, according to the manufactures instructions. The optical density of the 200µL of sample was taken by the spectrophotometer at the peak absorbance wavelength.

III. Results

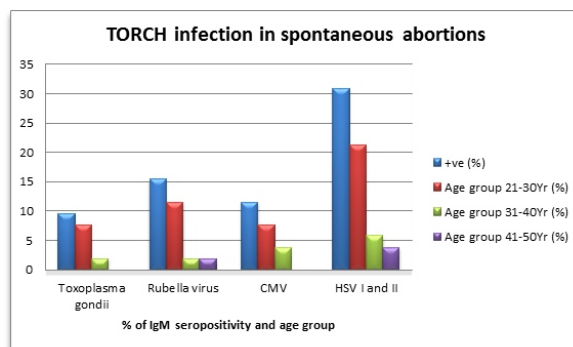
Our present study reveals that, the TORCH infection was seen in 52 % of women positive for serum IgM antibodies. Maximum percentage was for HSV infection (30.8%) followed by rubella (15.4%), CMV (11.5%), and Toxoplasma (9.6%) (Table I and Fig- 1).

TORCH infection	Total samples	+ve	-ve	Age group 21-30	Age group 31-40	Age group 41-50
Toxoplasma gondii	52	5 (9.6%)	47 (90.4%)	4 (7.7%)	1 (1.9%)	-
Rubella virus	52	8 (15.4%)	44 (84.6%)	6 (11.5%)	1 (1.9%)	1 (1.9%)
CMV	52	6 (11.5%)	46 (88.5%)	4 (7.7%)	2 (3.8%)	-
HSV I and II	52	16 (30.8%)	36 (69.2%)	11 (21.2%)	3 (5.8%)	2 (3.8%)

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Table- shows the results of TORCH infection according to age group.

Among the age groups, the TORCH IgM seropositivity was found highest in age group 21-30 years - with the percent IgM antibodies 30.8% for HSV, 15.4% & 11.5% for Rubella and CMV, 9.5% for toxoplasma. Based on IgM evidence, TORCH agent incidence varied from 15.4% due to Rubella, to 30.8% by Herpes (HSV 1&2) with p values as significant. IgM antibodies towards toxoplasma was seen with rubella in one case, toxoplasma, rubella and CMV in three, all four TORCH agents in one, rubella and CMV together in one, rubella, CMV and herpes in two, CMV and Herpes in three and rubella and herpes in one case.



IV. Discussion

TORCH agents are known to cause infections in utero and are often responsible for abortions (5,6). But there are considerable geographical variations in the prevalence of these agents among the women of child bearing age and are responsible for pregnancy wastage.

IV.1 Toxoplasma

Known to be caused by the protozoan, Toxoplasma gondii, in the present study, in abortion as a manifestation of pregnancy wastage (7, 8), IgM evidence of infection was found in 5/52 i.e. 9.6% cases while in controls it was seen only in 2% cases with p value as 0.01. It indicates no significant relationship of toxoplasmosis as an underlying cause of abortion (9).

IV.2 Rubella

Among 52 cases of abortions, rubella IgM evidence was seen in 8 i.e. 15.4% cases while in controls it was an outcome only in 3.3% cases and the p value is <0.04. It is a significant finding. In age group 21-30 years, rubella IgM was found to be 11.5%, in 31-40 years age group it was 1.9% while in age group 41-50 years, it was 0.0%. The p value, in both the groups, is less than 0.05. It reflects that IgM serology status is very important as an evidence of primary rubella infection in pregnancy (10 & 13).

IV.3. CMV

CMV primary infection was found to be 11.5% in 52 abortion cases while it was only 2% in controls. The p value is less than 0.05. In age group 21-30 years, IgM seropositivity was 7.7% in group 31-40 years, it was 3.8%. On statistical analysis p value is border line insignificant (0.055) (11, 12).

IV.4 HSV

For HSV our study revealed that in age group 21-30 yrs, IgM seropositivity was 21.2%; in group 31-40 years, it was 5.8% & in age group 41-50 years, it was 3.8%. The overall picture reflects a significantly higher seropositivity in all age groups from 21 to 40 years for HSV infection (p value 0.01) (14-16).

In Indian context it is important to know that the study carried out by Singh and Nautiyal in 1991 in Kumaon region (now Uttaranchal) (15-17) and later on by Singh et al in 1994 in Maharashtra states (16) indicate that the Indian population particularly the women are highly exposed to TORCH. infections especially Toxoplasma and rubella. The seroprevalence in these studies was directly proportional to the age group of the population tested, with highest prevalence of 77% by the marriage age (18-30 yrs). Our study also finds that the highest incidence of TORCH is seen in the age 21-30 years.

V. Conclusion

In conclusion, this study has established the general role of TORCH pathogens on miscarriage in first trimester pregnancy (18). When only 14.1% of the miscarriage cases were totally free of TORCH infections, 60% of the control group was free out of it. The role of Rubella and *H. Simplex* virus infection on miscarriage is well proved here. *T. gondii* and Cytomegalovirus were not found to have influenced miscarriage, as per this study (19). The increased susceptibility of our general population to Rubella and HSV, compared to *T. gondii* and CMV, further supports these observations (20). Various abortion categories are also influenced by these pathogens differently. It is also observed that cross infections with two or more of the TORCH agents have a statistically significant (p<0.003) prevalence in first trimester miscarriage cases (21).

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