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Seropositivity of Toxoplasma Antibodies and its role in Pregnancy Wastage

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The present study was carried out to determine the seropositivity of IgM antibodies to *toxoplasma* and to assess its role in pregnancy wastage in women with bad obstetric history. This study was conducted at a tertiary care hospital in West of Rajasthan. The study population consisted of 250 women aged 18-35 years with history of two or more pregnancy wastages in the form of abortions, stillbirths, preterm deliveries and /or congenital anomalies. Fifty healthy women with no bad obstetric history were taken as controls. Serum samples obtained from these cases were evaluated for IgM antibodies to *toxoplasma* by ELISA method. The overall seropositivity of IgM antibodies to *toxoplasma* was found to be 55/250(22%) among the study group. Among the control group seroprositivity was 1/50(2%). The difference was statistically significant (P=0.00092). Maximum number of patients under study had history of abortion 187/250 (74.8%) followed by congenital anomalies 34/250 (13.3%), still births 15/250(6%) and preterm deliveries 14/250 (5.6%). Seropositivity for IgM antibodies to *toxoplasma* was maximum among abortion cases 47/187(25.13%) followed by congenital anomalies 5/34 (14.7%), still births 2/15 (13.33%) and preterm deliveries 1/14 (7.14%). The presence of Toxoplasma IgM antibodies to *toxoplasma* in the serum of cases with abortions (47/187) showed a significant association (p=0.039). History of contact with animals particularly cats was significant in seropositive cases. (p=0.003) The current study reveals a significant correlation between IgM antibodies to *toxoplasma* and pregnancy wastage.

Key words: TORCH, Bad Obstetric History, Abortions, *Toxoplasma gondii*.

Pregnancy wastage is one of the tragedies encountered among the women in child bearing age. Maternal infections play a critical role in pregnancy wastage. Toxoplasmosis is one such infection which has been known to be associated with increased frequency of pregnancy wastage in the form of abortions, still births, premature deliveries and congenital anomalies. Toxoplasmosis is caused by a coccidian protozoa *Toxoplasma gondii*.

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The infection is usually asymptomatic in healthy adults but if acquired during pregnancy especially as primary infection may cause damage to fetus. The effect on fetus depends upon the gestational age, the virulence of the parasite and the immune status of the individual. When primary infection occurs during pregnancy the risk of fetal infection increases from 15% in the first trimester to 60% in the third trimester.[1] However the consequences of infection in the first trimester are more severe than in third trimester. Significant correlation between presence of antibodies to *toxoplasma* and bad obstetric history has been well documented in literature in different parts of India.[2-5] As there is a scarcity of data regarding association between maternal toxoplasmosis and

pregnancy wastage from the North-West region of India the present study was carried out to determine seropositivity of IgM antibodies to *toxoplasma* using ELISA technique among women of child bearing age with history of 2 or more pregnancy wastages and to assess the relationship of presence of antibodies to *toxoplasma* with various forms of pregnancy wastage.

MATERIALS AND METHODS

The present study was carried out in the Clinical Microbiology section of the Department of Microbiology at the Sawai Man Singh Medical College, a tertiary care hospital in North West of Rajasthan. Study population consisted of 250 women referred from various Antenatal Clinics in the associated hospitals. These women aged 18-35 years with history of two or more pregnancy wastages in the form of abortions, still births, premature deliveries and/ congenital anomalies. All were referred for testing within 15 days of the last pregnancy wastage. Fifty women in the same age group with no bad obstetric history were included as control group. Detailed relevant history, clinical evaluation and investigations were recorded on a specially structured prorforma. All previous reports of USG, hormonal profiles etc were assessed to exclude other possible causes of fetal wastages such as anatomical /pathological abnormalities of genital tract. Routine tests were performed on all the subjects under study to rule out the other commonly known etiological factors for pregnancy wastage such as syphilis, diabetes, Rh incompatibility and renal diseases. From each case 5ml of venous blood was drawn aseptically and collected in a plain vial. Serum was separated as per standard procedure and stored at 2-8ºC. All samples were tested within one week of collection. Both the groups were analyzed for seropositivity of antibodies to *toxoplasma* by ELISA technique. Commercially available ELISA kits (HUMAN) were used and tests were performed as per manufacturers' instructions.

RESULTS

A total of 250 women with 2 or more pregnancy wastages and 50 women with no bad obstetric history as control group were studied for seropositivity of antibodies to *toxoplasma*.

Age of patients in both the groups ranged from 18-35years. Majority of patients whose samples were tested belonged to age group 21-25 years. Highest seropositivity (62.5%) was also found in this age group.

Maximum number of patients under study had history of abortion 187/250 (74.8%) followed by congenital anomalies 34/250 (13.3%), still births 15/250 (6%) and preterm deliveries 14/250 (5.6%).

Of the 250 women in the study group screened for antibodies to *toxoplasma*, 55 (22%) were positive for IgM antibodies. Seropositivity for IgM antibodies was maximum among abortion cases 47/187 (25.13%) followed by congenital anomalies 5/34 (14.7%), still births 2/15(13.33%) and preterm deliveries 1/14(7.14%).

Table 1. Seropositivity and pregnancy wastage

Pregnancy Wastage	Total cases	IgM Seropositive cases
Abortions	187	47 (25.1%)
Still Births	15	2 (13.3%)
Preterm Deliveries	14	1 (07.1%)
Congenital Anomalies	34	5 (14.7%)
Total	250	55 (22.0%)

History of contact with animals (cats, dogs and cattle) was elicited in 65/250 (26%) women tested. Of the 55 cases positive for IgM antibodies 24(43.63%) had history of contact with animals particularly cats. Of the 50 control cases only 1(2%) was positive for IgM antibodies to *toxoplasma*.

DISCUSSION

Toxoplasma gondii is known to cause infection in utero and is often responsible for abortions, still births, preterm deliveries and congenital anomalies.

In the present study seropositivity of IgM antibodies to *toxoplasma* was found to be 22% among women with history of pregnancy wastage and 2% in the control group. The difference was found to be statistically significant (p=0.00092). This supports the concept that a relationship exists between bad obstetric history and maternal toxoplasmosis. Various studies carried out in India

have reported *toxoplasma* seropositivity of 19-22% which correlates well with our study.[1,3,6,7,8.]

However some studies have reported lower seropositivity of 7.7%-14% while some other studies have reported a higher seropositivity (27% -42.5%).[2,13-17]

Variable results reported in different studies could be due to difference in the type of tests used for detection of antibodies to *toxoplasma*, variable number of cases included and geographical variation in prevalence of *toxoplasma*.

In our study highest seropositivity (25.13%) was observed in abortion cases, which is in agreement with other studies[12, 17].

The presence of IgM antibodies to *toxoplasma* in the serum of cases presenting with abortions showed a significant association (p=0.039).[2]

Among the cases with history of still births the IgM seropositivity was 13.3% in our study. A variable seropositivity (3.7% -30%) has been reported in different studies from various parts of India.[1, 4, 12,15,17]

The association between preterm deliveries and *toxoplasma* antibodies was observed only in 7.14% cases in our study which is much lower than that reported by other workers.[1,12,15,17]. However it is comparable with that reported by Dashora *et al.,* (4.2%) [4]

In women in whom the pregnancy outcome was congenitally malformed babies, seropositvity of *toxoplasma* antibodies was14.7%.Variable results have been reported in literature by different workers.[1, 12,15,17.]

In our study history of contact with animals particularly cats was significant in seropositive cases (p=0.003).

CONCLUSION

The current study reveals a significant correlation between IgM antibodies to *toxoplasma* and pregnancy wastage. Keeping in view the devastating fetal consequences, preconception or early trimester screening for antibodies to *toxoplasma* should be done. Early diagnosis and timely management of positive cases will help in preventing pregnancy loss and fetal anomalies.

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