

## INCIDENCE OF TOXOPLASMOSIS, RUBELLA AND SYPHILIS IN MISSED ABORTION AND INTRAUTERINE DEATH

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### SUMMARY

The present study was conducted on 25 cases of missed abortion between 6-20 weeks of gestation and 25 cases of unexplained intrauterine death between 21-40 weeks of gestation. 25 cases of M.T.P. and 25 cases of normal pregnancy were taken as controls. Their sera were studied by ELISA for IgM specific antibodies to toxoplasma gondii and Rubella and for syphilis by nonspecific VDRL and *Specific T.P.H.A.* test. Of the 50 cases of study group, 16 cases (32%) showed antibodies to Toxoplasma (6 cases), Rubella (1 case) and Syphilis (9 cases) as compared to all the control cases who were seronegative ( $P < 0.01$ ). There was no case with more than one etiological agent. All 6 cases seropositive for Toxoplasma as well as 1 case of Rubella were associated with missed abortion, whereas 8 out of 9 cases of syphilis were associated with late fetal deaths.

### INTRODUCTION

The occurrence of fetal death is one of the tragedies that confronts the physician providing obstetric care, his patient and her family.

A number of microbiologic agents may

produce pregnancy loss without significant evidence of maternal disease (*King, 1982*). The true incidence of infection in pregnant women is not known and the contribution of infection to abortion, congenital malformation and fetal disease can only be guessed (*Kovar and Harvey, 1981*).

Recently, increasing attention has

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been directed to intrauterine infection by *Toxoplasma gondii* (a protozoa), Rubella (a virus) and *Treponema pallidum* (a bacteria) in causing serious fetal and perinatal damage by crossing the placenta during maternal infection (Kovar and Harvey, 1981).

The diagnosis of these infections is based on isolation of the organism from tissue or body fluids, but these are difficult and time consuming. Recently serological tests for the demonstration of the specific antibodies to these agents using the Enzyme Linked Immunosorbent Assay (ELISA) is used. IgM-ELISA is reported to be most specific and sensitive test for detecting recent infection by these agents. Serological diagnosis of syphilis is based on demonstrating antibodies against non-specific and specific treponemal antigens.

#### **MATERIAL AND METHODS**

The subjects of this study were taken from Indoor Department of Obstetrics and Gynaecology of Smt. Sucheta Kriplani Hospital, New Delhi.

1. Study group I : comprised of 25 cases of missed abortion.

Study group II : comprised of 25 cases of intrauterine fetal death.

2. Control group I : 25 women who had to undergo therapeutic abortion.

Control group II : 25 women who had a normal live birth.

A detailed history and examination in each case was followed by special investigations like blood group, Rh typing, Complete haemogram, Coagulation profile, Blood sugar, Urine analysis and ultrasonography.

3-5 ml of blood was drawn from each case. Serum was separated and stored at - 20°C with addition of 0.1% sodium azide as preservative.

Specific IgM antibodies to *Toxoplasma* and Rubella were detected by Enzyme linked immunosorbent assay using in test kit (Northumbria biological Limited, England). Quantitative and qualitative assay for antibodies against syphilis was done by VDRL test and reactive cases were confirmed by specific haemagglutination test (TPHA) ('Behring', Germany). All positive serological tests were repeated after 6 weeks.

#### **OBSERVATIONS**

In this study, the mean age in both the study group I and II 24.5 years and 25.4 years respectively. The mean parity was 2.28 in study group I and 2.7 in study group II.

Out of 50 cases, 16 were positive for TORS agents compared to 50 negative control cases. Of these 16 cases, 12% were positive for *T. gondii*, 2% for Rubella and 18% for syphilis (Table I).

The cases sero-positive for *T. gondii* (6 out of 50) were seen in the study group I i.e. period of gestation < 20 weeks; Rubella was seen in the 1st trimester whereas syphilis was common in study group II (8 out of 9 cases) (Table II).

It was observed that 50% of cases (3 out of 6) sero-positive for *Toxoplasma*, had a history of previous abortions; whereas only 2 cases of syphilis had a history of previous abortions (Table III).

The following titres of the IgM specific antibodies were seen. In *Toxoplasma*, 5 cases had 1:50 titres and 1 case

Table I

## Incidence of TORS complex in Study Group (50 sera)

Disease	No. of cases	Percentage	Control	p value
Toxoplasma	6	12	Nil	< 0.01*
Rubella	1	2	Nil	> 0.05
Syphilis	9	18	Nil	< 0.01*
TORS +ve	16	32	Nil	< 0.01*

\* Statistically significant.

Table II

## Incidence of TORS seropositivity according to period of gestation

	Period of question	No. of cases	No. +ve for TORS	Disease		
				T	R	S
Study Group I	< 12 weeks	10	5	4	1	0
	13-20 weeks	15	3	2	0	1
Study Group II	21-40 weeks	25	8	0	0	8
Total		50	16	6	1	9
p value			> 0.05	< 0.05	> 0.05	< 0.05

Table III

## Correlation between the etiological agent and the number of abortions

Disease	No. +ve for TORS	No. of cases with previous abortions
Toxoplasma	6	3
Rubella	1	-
Syphilis	9	2

had a titres of 1:100. Rubella - single case had titre 1:50. V.D.R.L. was reactive

in 14 cases. 7 cases had a positive qualitative test, 2 were reactive in dilution of 1:2, 3 in dilution of 1:4 and one each in dilution of 1:8 and respectively. 9 out of 14 VDRL reactive cases were confirmed by specific TPHA test (Table IV).

**DISCUSSION**

Increasing evidence is available which shows that infection by TORS agents (Toxoplasma, Rubella and Syphilis) induce fetal loss in women (Tantivanich and Tharavanij, 1983). These agents have

Table IV

## TORS agents and titres of IgM specific antibodies and VDRL

Agents	No. +ve for TORS	Titres				
		1 : 50	1 : 100			
Toxoplasma	6	5	1			
Rubella	1	1	-			
		Neat	1 : 2	1 : 4	1 : 8	1 : 32
Syphilis	14	7	2	3	1	1

a predilection for the fetus causing abortions, stillbirths, congenital malformation, acute disease during neonatal period or chronic infection that often defy detection (Devore, et al 1983). The demonstration of IgM antibodies in maternal or fetal serum is an evidence of recent infection and presence of such specific antibody to any of these agents could mean that the agent to which the antibody is directed in the most likely cause of fetal loss (Tantivanich and Tharavanij, 1983).

The incidence of these agents in causing missed abortion or intrauterine fetal death in our study were *T. gondii* (12%), Rubella (2%) and Syphilis (18%). Thus 32% cases were seropositive for these agents. In contrast, all the control cases were seronegative.

Toxoplasmosis, if acquired in the first trimester, may lead to miscarriage, but Toxoplasmosis occurring late in pregnancy may result in either asymptomatic or subclinical infection (Lee, 1988). Similar observations were made in our study, in which all seropositive cases for Toxoplasma were associated with missed abortion. Various studies carried out in

India to determine the incidence of Toxoplasma antibodies in the sera of women with history of fetal wastage show seropositivity rates, ranging from 3.6 to 20%. However, Hingorani (1970) reported the incidence as high as 71%. All cases seropositive for IgM Toxoplasma antibodies had received therapy in the form of a combination of pyremethamine and sulphadiazine for a period of three weeks. On subsequent follow-up after 6 weeks, a fall in the titres was detected.

Maternal Rubella during the first trimester of pregnancy causes fetal damage in the majority of cases. After the first trimester and particularly during the fourth month of pregnancy, the risk of serious fetal damage declines (Cradock-Watson, 1980). We detected IgM Rubella antibody only in 1 case of missed abortion. None of the cases with intrauterine fetal death showed seropositivity for Rubella. Tantivanich Tharavanij (1983) reported 9.6% seropositivity rate for Rubella in Thai women reported with abortion.

Early syphilis can profoundly affect pregnancy outcome as *T. pallidum* can

cross the placenta even in the first trimester (Harter, Benirschke 1976). But presumed fetal immuno-incompetence protects the fetus from sequelae of infection until after approximately 18 weeks of gestation (Silverstein, 1966). In the present study 9 cases (18%) were positive for specific anti-Treponemal antibodies. 8 cases were associated with intrauterine fetal death. Wendel (1989) reported that in 50% of cases of congenital syphilis, the infants were stillborn. 14 cases were VDRL reactive. Out of these, 9 cases were confirmed by TPHA (Haemagglutination test) which is a specific test for syphilis. All cases of syphilis were treated with injection Benzathine Penicillin, 2.4 mega units, intramuscularly every week for 3 weeks.

In our study, we observed no case of mixed seropositivity for these agents.

#### CONCLUSION

There seems to be a significant contribution of Maternal infection to fetal loss.

Large scale studies are needed to study the role of Toxoplasma and Rubella in causation of early fetal loss. High incidence of syphilis in causing late fetal death as in this study is a cause for concern. It is imperative that all pregnant women should be screened by specific serological tests for syphilis in early pregnancy.

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