



Serological study for TORCH infections in women with bad obstetric history

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OBJECTIVE(S): To evaluate the incidence of TORCH infections in pregnancy wastage in women with bad obstetric history (BOH).

METHOD(S) : The study included 150 women with bad obstetric history and 75 clinically normal women with previous normal full term deliveries. Serological evaluation for TORCH infections was carried out by IgM ELISA method.

RESULT: Seropositivity for toxoplasma was 14.66%, rubella 4.66%, cytomegalovirus 5.33% and herpes simplex virus 8.66%. Maximum number of cases of abortion (27.27%), intrauterine growth retardation (9.37%), intrauterine death (17.64%) and preterm labor (18.18%) was associated with toxoplasma infection. Early neonatal deaths (8%) were maximally associated with rubella virus and herpes simplex virus infections while congenital malformations (9.52%) were evident maximally with herpes simplex virus infection.

CONCLUSION(S) : Seropositivity in women BOH is significantly higher ($P=0.0006$) in women with BOH than that in control. 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 fetal outcome.

Key words : bad obstetric history, TORCH infections, pregnancy wastage

Introduction

Bad obstetric history (BOH) implies previous unfavourable fetal outcome in terms of two or more consecutive spontaneous abortions, early neonatal deaths, stillbirths, intrauterine fetal deaths, intrauterine growth retardations and congenital anomalies. Maternal infections transmissible in utero at various stages of gestation lead to recurrent pregnancy wastage. Infections caused by TORCH – toxoplasma, rubella virus, cytomegalo virus (CMV) and herpes simplex virus (HSV) – is the major cause of BOH ¹.

Infections by TORCH agents in women are usually

asymptomatic and chronic. The social and reproductive maladjustment because of repeated pregnancy wastages, cost of treatment, and morbidity caused to the infant make the TORCH group of infections a major cause of concern. The prevalence of these infections varies from one geographical area to another ².

Many sensitive and specific tests are available for serological diagnosis of TORCH complex ³. ELISA for IgM antibodies against these infections is highly sensitive and specific ⁴.

Methods

A total of 225 women were investigated including 150 with BOH and 75 clinically normal ones with previous normal full term deliveries. Cases were included in the study group depending on previous history of having 2-3 pregnancy wastages, intrauterine deaths, preterm deliveries, intrauterine growth retardation, unexplained early neonatal deaths and congenitally malformed children.

Paper received on 16/02/2005 ; accepted on 19/05/2005

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Detailed examinations and conventional laboratory investigations were carried out.

From each woman 3 mL of venous blood was collected in a container with strict aseptic precautions. The serum was used for serological evaluation for TORCH infections. IgM antibodies for these infections were detected by ELISA test kit (Sera Quest, Florida, USA).

Results

The history of the 150 BOH cases consisted of abortion in 44 (29.33%), intrauterine growth retardation in 32 (21.33%), intrauterine death in 17 (11.33%), premature labor in 11 (7.33%), early neonatal death in 25(16.66%), and congenital malformation in 21(14%).

The maximum number (52%) of BOH cases belonged to the age group of 26-30 years (range 20 to 38 years).

Out of 150 BOH cases 50(33.33%) and out of the 75 healthy controls 6(8%) were serologically positive for one of the TORCH infections. Seropositivity rate in women

with BOH is significantly higher than in normal healthy controls. (P=0.0006).

In BOH cases the seropositivity for toxoplasma gondii was 14.66%, HSV 8.66%, CMV 5.33 and rubella virus 4.66%. While in the control cases the seropositivity for toxoplasma, rubella and CMV was 1.33% and for HSV 4%. The difference in seropositivity of toxoplasma between BOH cases and control cases was statistically significant. (P=0.0091) (Table 1).

The highest seropositivity in cases of repeated abortions was seen with *Toxoplasma gondii* (27.27%). In intrauterine growth retardation, toxoplasma (9.37%) showed highest seropositivity followed by rubella (6.25%). In intrauterine death and preterm labor toxoplasma showed highest seropositivity of 17.64% and 18.18% respectively. In early neonatal death cases, rubella and HSV showed highest seropositivity (8% each). In congenital malformation seropositivity with HSV was predominant (9.52%). One case of mixed infection was found in those with history of abortions (Table 2).

Table 1. The seropositivity of TORCH agents.

TORCH agent	Seropositivity BOH (n=150)		Seropositivity Controls (n=75)	
	No.	Percent	No.	Percent
Toxoplasma	22 ^a	14.66	01 ^a	1.33
Rubella	07	04.66	01	1.33
Cytomegalovirus	08	05.33	01	1.33
Herpes simplex virus	13	08.66	03	4.00
Total	50 ^b	33.33	06 ^b	8.00

One case showed mixed infection with toxoplasma and herpes simplex virus.

^a P = 0.0091 ^b P = 0.0006

Table 2. TORCH agents with different presentation of BOH cases.

Bad obstetric history	Toxoplasma +ve		Rubella +ve		Cytomegalovirus +ve		Herpes simplex virus +ve		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Abortion (n=44)	12	27.27	1	2.27	5	11.36	6	13.63	24
Intrauterine growth restriction (n=32)	03	09.37	2	6.25	1	03.12	1	03.12	07
Intrauterine death (n=17)	03	17.64	1	5.88	1	05.88	1	05.88	06
Preterm labor (n=11)	02	18.18	1	9.09	0	0.00	1	09.09	04
Early neonatal death (n=25)	01	04.00	2	8.00	0	0.00	2	08.00	05
Congenital malformation (n=21)	01	04.76	0	0.00	1	04.76	2	09.52	04

Discussion

It is evident that maternal infections play a critical role in pregnancy wastage and their occurrence in patients with BOH is a significant factor. Persistence of encysted forms of toxoplasma in chronically infected uteri, and their subsequent rupture during placentation lead to infection of the baby in the first trimester and often to recurrent miscarriages⁵. In the present study *T. gondii*, which is a known etiological agent in recurrent pregnancy wastage was found in 14.66% pregnant women with BOH. This is similar to what has been reported earlier is^{6,7}.

Congenital transmission of toxoplasma is known to occur during the acute phase of maternal infection and the IgM antibodies are evaluated in the maternal sera⁸. IgM antibodies were found in 27.27% of our cases with recurrent abortions compared with 12% in Bhatia et al's⁹ study.

Rubella is a mild viral illness in children but can occasionally infect adults. Primary virus infection during pregnancy may cause fetal damage. In our study seropositivity for rubella was 4.66% while other workers report seropositivity ranging from 4 to 17.77%^{10,11}.

Both CMV and HSV are known to have an intrauterine route of transmission with significant mortality and morbidity^{12,13}. The present study shows seropositivity rate of 5.33% for CMV specific IgM in women with BOH. In other studies seropositivity ranges from 3 to 12.9%^{14,15}. It was suggested that pregnancy may reactivate the latent virus leading to further reproductive wastages. Seropositivity rate for HSV IgM among BOH patients in our study was 8.66%, similar to what has been reported previously¹⁵.

Conclusion

TORCH infections are associated with recurrent abortion, intrauterine growth retardation, intrauterine death, preterm labor, early neonatal death, and congenital malformation. Previous history of pregnancy wastages and positive serological reactions during the current pregnancy

helps management of these cases in order to reduce adverse fetal outcome.

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