

Serological Study for TORCH Infections by ELISA Method in Women with Bad Obstetric History in Kerbala City

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Abstract

Background: Bad obstetric history (BOH) implies previous unfavorable 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.

Objective(S): The study aimed to evaluate the incidence of TORCH infections in women with bad obstetric history (BOH).

Patients & methods : The study included 130 women with bad obstetric history and 65 clinically normal women with previous normal full term deliveries who were attended to the gynecological & obstetrical hospital from January to July 2012. Serological evaluation for TORCH infections was carried out by IgM ELISA method.

Result: Seropositivity for toxoplasma was 39.23%, rubella 12.3%, cytomegalovirus 35.38% and herpes simplex virus 1.53%. Maximum percent cases of abortion (41.37%) Early neonatal death (25%) congenital malformation (16.6%) was associated with toxoplasma infection. Maximum percent of cases of abortion (36.20%) Early neonatal death (25 %) congenital malformation (33.3%) was associated with cytomegalo infection. while (1.72%) and (13.79%) maximum percent of cases of abortion associated herpes and rubella respectively

Conclusion(S): 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 must be considered while managing BOH cases so as to reduce the adverse fetal outcome.

Keywords: BOH: bad obstetrical history, TORCH T toxoplasma, R rubella, C: CMV cytomegalovirus, H herpes.

Introduction

Bad obstetric history (BOH) implies to previous unfavorable 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.⁽²⁾. Fetus TORCH infections cause a syndrome characterized by microcephaly, sensorineural deafness, chorioretinitis, hepatosplenomegaly and thrombocytopenia. Symptoms of a TORCH infection may include fever and poor feeding. The newborn is often small for gestational age. A petechial rash on the

skin may be present, with small reddish or purplish spots due to bleeding from capillaries under the skin. An enlarged liver and spleen (hepatosplenomegaly) is common, as is jaundice. However, jaundice is less common in Hepatitis B because a newborn's immune system is not developed well enough to mount a response against liver cells, as would normally be the cause of jaundice in an older child or adult. Hearing impairment, eye problems, mental retardation, autism, and death can be caused by TORCH infections. The mother often has a mild infection with few or no symptoms (^{3,4}).

Method

The study included 130 women with bad obstetric history and 65 clinically normal women with previous normal full term deliveries who were attended to the gynecological & obstetrical hospital. 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 toxoplasma, rubella, cytomegalovirus and herpes enzyme immunoassay kit :bioCheck, Inc. BC-1087.⁽⁵⁾

Results

The history of the 130 BOH cases consisted of abortion in 116 (89.23%) (21.33%), early neonatal death in 8 (0.61%) and congenital malformation in 6 (0.46%). The maximum number (63.84%) of BOH cases belonged to the age group of 15-29 years and (36.15%) of BOH belong to age group 30-45. Out of 150 BOH cases 115 (88.46%) and out of the 65 healthy controls 8(12.3%) were serologically positive for one of the TORCH infections. Seropositivity rate in women with BOH is significantly high ($P < 0.0001$). In BOH cases the seropositivity for toxoplasma gondii was 39.23 % HSV 1.53 % CMV

35.38% and rubella virus 12.3 % while in the control cases the seropositivity for rubella and CMV was 1.53%, for toxoplasma gondii 3.07% and for HSV 6.15%. Maximum percent cases of abortion (41.37%) Early neonatal death (25%) congenital malformation (16.6%) was associated with toxoplasma infection. Maximum percent of cases of abortion (36.20%) Early neonatal death (25 %) congenital malformation (33.3%) was associated with cytomegalo infection . while (1.72%) and (13.79%) maximum percent of cases of abortion associated herpes and rubella respectively as show in table (2).

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 miscarriages ⁵. 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 sera (8).

IgM antibodies were found in 39.23%, of our cases with recurrent abortions compared with 12% in Bhatia et al's (9) study and 27.27% in Rajendra et al's study (10) .Rubella is a mild viral illness in children but can occasionally infect adults. Primary virus infection during pregnancy may cause fetal damage depending on age of gestation higher incidence of congenital rubella syndrome during 1st trimester till 16th week of gestation after that the incidence of rubella syndrome decrease till

3rd infection with rubella virus lead congenital

deafness because it infect small blood vessel in inner ear (11).

Table 1. The seropositivity of TORCH agents.

TORCH agent	Seropositivity BOH (n=130)		Seropositivity control (n=65)	
	No.	Percent%	No.	Percent
CMV	46	35.38	1	1.53
toxoplasma	51	39.23	2	3.07
Herps	2	1.53	4	6.15
Rubella	16	12.3	1	1.53
Total	115	*88.46	8	*12.3

* p value < 0.001

Table 2. TORCH

	CMV +		TOXO +		Herpes +		Rubella +		Total (TORCH) agents		negative	
	No.	%	No	%	No	%	No	%	No	%	No	%
BOH												
Abortion (116 n=)	42 (36.20)		48 (41.37)		2 (1.72)		16 (13.79)		108(93.10)*		8 (6.89)*	
END (n=8)	2 (25)		2 (25)		0		0		4 (50)**		4 (50)**	
CMF (n=6)	2 (33.33)		1 (16.66)		0		0		3 (50)**		3 (50)**	

* P value < 0001

** non significant

In our study seropositivity for rubella was 12.3% while other Workers report seropositivity ranging from 4 to 17.77% (12.13) and 4.66% in Rajendra et al's(10). Both CMV and HSV are known to have an intrauterine route of transmission with significant mortality and morbidity(14.15) The present study shows seropositivity rate of 35.38 for CMV specific IgM in women with BOH. In other studies seropositivity ranges from 3 to 12.9%(16.17) and Rajendra et al's 5.33% (10).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 1.53% compare with Rajendra et al's was 8.66% (10).

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 must be considered while managing BOH cases so as to reduce the adverse fetal outcome.

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