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SEROPREVALENCE OF TOXOPLASMA AND RUBELLA INFECTIONS IN BAD OBSTETRIC HISTORY PATIENTS AT A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Toxoplasma gondii and Rubella virus infections are one of the contributing causes of Bad Obstetric History. These infections in pregnancy results in various congenital malformations, adverse outcome of foetus & pregnancy.

Objective: To evaluate the seroprevalence of Toxoplasma gondii and Rubella virus infections in women with Bad Obstetric History patients.

Materials & Methods : Determination of Toxoplasma and Rubella IgM &IgG antibodies was done in the serum samples collected from BOH patients using ELFA (Enzyme Linked Flourescent Assay) technique on mini VIDAS.

Results: Out of total 100 BOH patients included in the study, seroprevalence of Toxo IgM was 2%,Toxo IgG was 6%, Rubella IgM was 2% and Rubella IgG was 84%.

Conclusion: In order to prevent adverse effects of Toxoplasma and Rubella infections on pregnancy and foetus, routine screening for these infections in antenatal cases with bad obstetric history should be carried out for early diagnosis & appropriate management.

KEYWORDS : Bad obstetric history, Toxo IgM/IgG, Rubella IgM/IgG, abortion

INTRODUCTION-

The term Bad Obstetric History (BOH) is applied to a pregnant woman where her present obstetric outcome is likely to be affected adversely by the nature of the previous obstetric disaster which may be in the form of recurrent miscarriages, intrauterine foetal demise, intrauterine growth retardation, early neonatal death and / or congenital anomalies[1]. Causes of BOH may be genetic, hormonal ,abnormal maternal immune response and/or maternal infections[2]. Toxoplasmosis and rubella virus infections causes perinatal infections and can lead to severe foetal anamolies or even foetal loss.

Toxoplasmosis is caused by the protozoan parasite Toxoplasma gondii, which is transmitted to humans through the infection of food or water contaminated with cat faces or eating undercooked meat of the infected sheep, goat, cow, or pig and other avian species. Second trimester infections commonly cause eye problems (chorioretinitis), hydrocephalus, and/or intracranial calcifications in the developing brain[3]. Third trimester infections are often asymptomatic, but the foetus may present with pathologies later on including fever, intrauterine growth retardation (IUGR) and various congenital anomalies. If infection does occur during pregnancy, mothers may remain asymptomatic, and diagnoses are typically made through serologic testing.

Rubella virus which is a RNA enveloped virus readily invades the placenta and fetus during gestation[4]. Infants infected with rubella virus in utero may have a myriad of physical defects including Hearing impairment/deafness, Congenital heart defects, Eye defects, Microcephaly, Central nervous system sequelae[5]. This constellation of severe birth defects is known as ***congenital rubella*** syndrome. Modern vaccine programs have been successful in nearly eradicating congenital rubella disease; however, prenatal rubella infections are still possible.

MATERIALS AND METHODS

The present study was conducted from Oct.2015 to Sep. 2016. A total of 100 pregnant patients with Bad Obstetric History were included in this study. Non pregnant women and pregnant women without bad obstetric history were excluded from the study. The study was approved by the institutional ethics committee, and informed consent from participants was obtained. Blood samples from the patients were taken aseptically and serum was extracted by centrifugation. Obtained serum samples were used for quantitative estimation of IgM and IgG antibodies against toxoplasma and rubella infections. VIDAS TOXO IgM (TXM) / TOXO IgG (TXG) / RUB IgM (RBM) /RUB IgG (RBG) are automated quantitative test for use on the mini VIDAS.

The assay principle combines a two-step enzyme immunoassay sandwich method with a final fluorescent detection **(Enzyme Linked Flourescent Assay).**

The Solid Phase Receptacle (SPR) serves as the solid phase as well as the pipetting device for the assay.Reagents for the assay are ready-to-use and pre dispensed in the sealed reagent strips.The serum sample were insereted in first well of strips. All of the assay steps are performed automatically by the instrument. During the final detection step, the substrate (4-Methyl-umbelliferyl phosphate) is cycled in and out of the SPR. The conjugate enzyme catalyzes the hydrolysis of this substrate into a fluorescent product (4-Methyl-umbelliferone), the fluorescence of which is measured at 450 nm. The intensity of the fluorescence is proportional to the concentration of antibodies in IU/ml present in the sample.

TEST	NEGATIVE	EQUIVOCAL	POSITIVE
Toxo. IgM	<0.55(i)	0.55-0.65(i)	>0.65(i)
Toxo. IgG	<4(IU/ml)	4-8(IU/ml)	>8(IU/ml)
Rubella IgM	0.80(i)	0.80-1.20(i)	>1.20(i)
Rubella IgG	<10(IU/ml)	10-15(IU/ml)	>15(IU/ml)

RESULTS-

A history of 100 BOH patients consisted of abortions in 55%, preterm in 32%, IUFD in 26%, early neonatal death in 16% , still births in 3%, congenital abnormalities in 2% and cases with more than one of the above conditions preexisting in 24%,. Higher percentage of BOH cases were from rural areas and low socio economic group.

The age wise distribution of 100 BOH cases with maximum cases in the age group 21 to 25 years (55%) followed by the women in age group 26 to 30 years (28%), while the women in age group <20 and >35 years showed a low percentage of 4 and 2 respectively. Maximum incidence of abortion cases, intrauterine foetal death, preterm deliveries and early neonatal deaths were noted in age group 21 to 25 years. Patients in age group 26-30 years shows maximum number of cases of still births and congenital anomalies.

TABLE 1: AGE WISE DISTRIBUTION OF DIFFERENT PRESENTATIONS OF BOH CASES UNDER STUDY

AGE IN YEARS	ABORTION	IUFD	PRETERM	EARLY NEONATAL DEATH	STILL BIRTH	CONGENITAL ANAMOLIES
<20	2	2	1	0	0	0
21-25	36	15	11	8	1	0
26-30	14	4	8	5	2	2
31-35	5	3	2	3	0	0
>35	0	2	1	0	0	0

In present study Outcome of current pregnancy were abortion in 8%, intra uterine foetal death in 19 %, preterm in 7 % , early neonatal death in 1% and live births in 65 %.

Seroprevalance of toxoplasma IgM antibodies was 2% and IgG antibodies was 6%,Seroprevalance of rubella IgM antibodies was 2% and IgG antibodies was 84%.

TABLE 2: SEROPREVALENCE OF TOXOPLASMA AND RUBELLA IN STUDY GROUP IN RELATION TO THEIR OBSTETRIC OUTCOME

ANTIBODIES	ABORTION	IUFD	PRE-TERM	EARLY NEO-NATAL DEATH	STILL BIRTH	CONGENITAL ANAMOLIES
TOXO IgM	1	1	0	0	0	0
TOXO IgG	2	3	1	0	0	0
RUB IgM	1	1	0	0	0	0

Maximum seropositivity is seen in the age group of 21 to 25 years i.e. 10.9 % followed by age group of 26 to 30 years i.e.10.7 % in this study.

TABLE 3 : RELATION OF SEROPOSITIVITY WITH DIFFERENT AGE GROUP

S.NO.	AGE GROUP (IN YEARS)	TOTAL WOMEN IN THIS AGE GROUP	NO. OF POSITIVE CASES	PERCENT SEROPOSITIVE
1.	<20	4	0	0
2.	21 TO 25	55	6	10.9
3.	26 TO 30	28	3	10.7
4.	31 TO 35	11	1	9.09
5.	>35	2	0	0

There is maximum seroprevalence in second para patients followed by nulli para women. Seropositivity is more in women belong to rural area and low socioeconomic group of patients.

DISSCUSION-

Infections acquired *in utero* are a significant cause of fetal and neonatal mortality and an important contributor to early and later childhood morbidity[6].Women affected with any of these diseases during pregnancy are at high risk for miscarriage, stillbirth, or for a child with serious birth defects and/or illness. Thus, screening is performed before or as soon as pregnancy is diagnosed to determine the mother's history of exposure to these organisms.

In the present study 2% women were positive for IgM antibodies against toxoplasma gondii.It does not correlate with other studies done in India as well as outside India. Low sero prevalence in the present study could be due to variation in food habits and socio economic factors. Lower incidence had been reported by MS Sadik et al.(2012)[7] and Padmavathy et al.(2013)[8] i.e. 6.97% and 5.8 % respectively. A high incidence was reported by Sarkar M et al.(2012)[9] i.e.21.9% IgM antibody.

Seroprevalance of IgG antibodies in the present study was 6% which is comparable to study done by Padmavathy et al (2013)[8] i.e. 8%. A high seroprevalance was seen in study done by Thapliyal et al (2005)[10] and Devi S et al (2008)[11] i.e. 55% and 56.14% respectively. Low prevalance in the present study is probably due to the different prevalence of toxoplasma in different geographical regions probably because of different food habits and also socio economic factors.

Rubella IgM antibodies in the present study were positive in 2 % women which is comparable to studies done by MS Sadik et al (2012[7] and Padmavathy et al (2013[8] i.e. 4.65% and 4.6% respectively. High incidence have been reported by Turbadkar et al (2003[12], Fomda BA et al (2004)[12], Thapiyal et al (2005[110] i.e. 26.8%, 26.12 % and 28.6% respectively. Women at high risk for rubella in pregnancy are those who are non immnune to rubella and are exposed to infection. 84 % patients in the present study were found to immune against rubella which correlates well with reports given by Gandhoke et al (2005)[13], Chandy et al (2011)[14] and Padmavathy et al (2013)[8] i.e 86.9%, 87.5% and 90.8% % respectively but does not corelate with study done by MS Sadik et al (2012)[7] in which incidence was quite low i.e.29.06%.

Presence of natural immunity (IgG positive) is a parameter of protection from infection during pregnancy, the same as offered by vaccination. This shows that immunity to Rubella is high due to inclusion of MMR (measles, mumps, rubella) vaccine in the national immunization programme and acquired immunity from sub clinical infection.

Seropositivity is more in women belong to rural area. The reason being poor hygiene ,low socio-economic status , low literacy rates in the rural areas and poor vaccination regime followed.

CONCLUSIONS- All antenatal cases with BOH should be routinely screened for these infections as early diagnosis and appropriate intervention will help in proper management of these cases.

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