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Seroprevalence of Rubella antibodies among pregnant women with bad obstetric history in tertiary care hospital

Shashi Chopra *[1], *Gomty Mahajan* [2]

ABSTRACT

Background

Infection with rubella virus can be disastrous in early gestation. Rubella is a major cause of birth defects in infants and the risk of having congenital rubella in seronegative pregnant women is more in developing countries.

Aim

This study was carried to determine the seroprevalence of rubella antibodies in pregnant women.

Setting and Design

Three years retrospective study in the department of Microbiology, PIMS, Jalandhar.

Material and method

This study comprised of 250 pregnant women, whose blood samples were collected, sera were screened for rubella specific IgM and IgG antibodies by RecomLine ToRCH

Result

Out of 250 samples (Study group), 53% (n=132) were seropositive for IgG antibodies and 4.5% (n=9) were seropositive for IgM antibodies.

Conclusion

Our study demonstrates a strong association between rubella infection and BOH in women. Serosurveillance of Rubella among adolescent girls and women of child bearing age should be considered at a national level to prevent innumerable abortions, stillbirth and congenital anomalies due to rubella.

Keywords: Rubella, BOH, Pregnancy, IgM, IgG

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[1]**Professor, Department of Microbiology, PIMS, Jalandhar**

[2]**Associate Professor, Department of Microbiology, PIMS, Jalandhar**

***Corresponding Author:**
Shashi Chopra
EJ 227-228, Chahar Bagh, Jalandhar City, Punjab
dr.shashichopra@yahoo.com
Telephone number: +09417258884

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INTRODUCTION

Rubella virus, a member of Togaviridae family is an enveloped virus and is most consistent in its harmful effects on fetus through the placenta , capable of causing serious congenital defects(Congenital Rubella Syndrome(CRS), abortions, and still births.[1] Other symptoms include total or partial blindness(78%), sensorineural hearing loss(66%), psychomotor delay(62%), mental retardation(42%) and heart diseases(58%).[2] Foetal damage caused by maternal rubella is related to the stage of pregnancy.[3] If maternal infection occurs before 9 weeks of

gestation the risk of fetal manifestations is 85% , if infection occurs between 9 to 12 weeks then the risk of fetal manifestations is 52% and fetal manifestations is rare if maternal infection occurs after 16 weeks of gestation.[4] Rubella is worldwide in distribution, except in countries where the disease has been eliminated and vaccination has been included in national immunization schedule. WHO estimates that worldwide more than 100,000 children are born with CRS each year, most of them in developing countries.[5] Only a few studies have been conducted in India to know the proportion of the population susceptible to rubella especially in pregnant women so as to know the risk of CRS.[6-8] Therefore this study was undertaken to detect serological evidence of rubella infection in pregnant women with Bad Obstetric History (BOH).

MATERIALS AND METHODS

The present retrospective study was conducted on 250 blood samples of antenatal women over a period of 3years (2011-2014) received in the department of Microbiology. Two hundred and fifty pregnant women in the age group of 20-40 years were received and most of them had BOH with previous history of repeated abortions(93), single abortions(20), congenital anomalies (CA) (24), intrauterine death (IUD) (16) and premature deliveries (3). All the serum samples were screened for rubella specific IgM and IgG antibodies by RecomLine ToRCH Screening IgM/IgG kit (MIKROGEN Diagnostik) based on principle of ELISA test. Two test systems were composed of purified native and recombinant antigens, which were applied onto nitrocellulose membrane strips. The test was performed according to the manufacturer's instruction.

RESULTS

We analyzed the data over the past 4 years for Rubella antibodies in a tertiary care setup.

Out of 250 samples (Study group), 53% (n=133) were seropositive for IgG antibodies and 4.5% (n=9) were seropositive for IgM antibodies (Table I). In this study group, age wise seropositivity to rubella was found to decrease with increasing age, although the difference in the percentage of positives in the various age groups was not statistically significant.

Bad obstetric history according to age of pregnant women and IgM positivity is shown in table II. First term abortions were the most common outcome and IgM seropositivity was found to be more with decreasing age. Within the test group 7.52% (7/93) women were seropositive for IgM antibodies with history of repeated abortions, followed by 6.25% (1/16) women with history of IUD as shown in table II.

Table 1 Rubella Seropositivity Rates (IgG, IgM) in the Study Group

Age group (yr)	No. of women tested	No(%) of women positive for Rubella IgG	No(%) of women positive for Rubella IgM
20-25	115	72 (62.6)	3(2.6)
26-30	85	43 (50.58)	4(4.7)
31-35	42	14 (33.33)	2 (4.76)
36-40	8	3 (37.5)	0
TOTAL	**250**	132 (52.8)	9

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Table 2 IgM Seropositivity among Various Subgroups of Pregnant Women with BoH

BOH	No. of sample tested	IgM Positive (n)	(%)
Repeated abortions	93	7	7.52
Congenital anomalies	24	1	4.1
IUD	16	1	6.25
Still birth	10	-	-
Premature delivery	3	-	-
Total	146	9	6.16

DISCUSSIONS

Rubella virus infection during pregnancy can be disastrous. Diagnosis of rubella is very often missed as the infection is mild and the rash and lymphadenopathies are transient. Serodiagnosis is the most useful and reliable method to detect the rubella infection.[8] In the present study, 53% of the pregnant women were having rubella specific IgG antibodies, whereas rates as high as 87.9% and 61.3% IgG seropositivity were even reported by few workers .[9,10]

In the present study, 4.5% women with previous BOH were seropositive for IgM antibodies. It is in concordance with another study who reported 4.65 % IgM seropositivity among pregnant women with BOH.[11] When a woman is infected with a pathogen during pregnancy, the normal immune response results in production of IgM antibodies followed by IgG antibodies. Immunoglobulin M antibodies against TORCH organisms usually persist for about 3 months, while IgG antibodies are detectable for a lifetime, providing immunity and preventing or reducing the severity of reinfection. Thus if IgM antibodies are present in a pregnant woman, a current or recent infection with the organism is predicted. It is evident that maternal infections play a critical role in pregnancy wastage and their occurrence in patients with BOH is a significant factor.[11] Sero-epidemiolgical studies have shown that 10-20% of the women who were in the childbearing ages in India, were susceptible to Rubella infection.[12,13] IgM seropositivity in women with history of repeated abortions, IUD and congenital anomalies were 7.52%, 6.25% and 4.1% respectively. Whereas other workers reported it to be 13.33%,12.73% and 0% respectively.[6,7] The primary infection with TORCH agents is likely to have a more important effect on fetus than recurrent infection and may cause congenital anomalies, spontaneous abortion, intrauterine fetal death, intrauterine growth retardation, prematurity, stillbirth and live born infants with the evidence of disease.[14]

CONCLUSION

Although our study is limited to pregnant women, its very well evident that rubella immunity is widely prevalent in pregnant women in our population, but a substantial number still remains unprotected from this infection. Hence all the antenatal cases should be routinely screened for Rubella antibodies, as early as detection and intervention will help in proper management of these cases. Also this study emphasizes the need to formulate an effective rubella immunization programme to boost the declining immunity

REFERENCES

1. Ezike E, Ang JY, Asmar B. Rubella. In: Krilov LR, Windle LM, Barton LL,Tolan RW, Steele R, editor. e-medicine; 2003 May10.
2. Givens K, Lee DA, Jones T, Ilstrup DM. Congenital rubella syndrome: ophthalmic manifestations and associated systemic disorders. Br.J. Ophthalmol.1993; 77; 358-363.
3. Ananthnarayan R, Panikar JR. Rubella, miscellaneous viruses. Text book of microbiology 8th Ed.2009,p551.Orient Longman Ltd
4. Ely JW, Yankowitz J, Bowdler NC. Evaluation of Pregnant Women Exposed to Respiratory Viruses.American Family Physician 2000May; 15:65-74.
5. Vijaylakshmi P,Anuradha R, Prakash K, Narendran K, Ravidran M, Prajna L, Browen D, Roberton SE. Rubella serosurveys at three Aravind Eye Hospitals in Tamilnadu, India. Bulletin of the World Health Organization 2004; 82(4):259-64.

6. Ramana B.V.,Reddy B K, Murty D S and Vasudevanaidu K H. Seroprevalence of Rubella in Women with bad obstetric History. J Family Med Prim Care. 2013;2(1):44-46
7. Fomda BA, Thokar MA, Farooq U, Sheikh A. Serprevalence of rubella in pregnant women in Kashmir. Indian J Pathol Microbiol. 2004;47(3):435-7
8. Gupta E, Dar L, Broor S.Seroprevalence of rubella in pregnant women in Delhi, India. Indian J Med R*es.* 2006; 123: 833-835.
9. Raveendran V, Pragash D S, Manju, Shaker I A,Rayapu V. Seroprevalence of rubella in antenatal women in and around Kirumampakkam Puducherry.International Journal of Bioassays.2012;1(9):74-78.
10. Turbadkar D, Mathur M, Rele M. Seroprevalence of torch infection in bad obstetric history. Indian J Med Microbiol.2003; 21:108-10.
11. Sadik MS, Fatima H, Jamil K, Patil C. Study of TORCH profile in patients with bad obstetric history. Biology and Medicine.2012;4(2):95-101
12. Rubella and Pregnncy.ACOG technical bulletin number 171-August 1992. Int J Gynecol Obstet 1993; 42:60-66.
13. Lever AL, Ross MR, Baboonian C, Griffiths PD. The immunity to Rubella among the women of the childbearing ages. Br J Obstet Gynecol 1987; 94:208-12.
14. Maruyama Y, Sameshima H, Kamitomo M, Ibara S, Kaneko M, Ikenoue T, *et al*. Fetal manifestations and poor outcomes of congenital cytomegalovirus infections: possible candidates for intrauterine antiviral treatments. Journal of Obstetrics and Gynaecology.2007; 33(5): 619–623.