

Prevalence of Rubella immunity in health care students

C Valsan, T Rao, S Innah, P Raji

Citation

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Abstract

Rubella infection acquired in early pregnancy can lead to congenital malformations. Serological testing of nonpregnant women may help to identify the level of immunity and vaccinate the nonimmune individuals. The present study was conducted on 124 female health care students in a teaching hospital. No participant has recorded evidence of vaccination against MMR in childhood. The study reveals that protective level of antibodies was present in 73(58.8%) but absent in 42(33.8%). 9 (7.2%) of the participants have equivocal results. The study indicates that immunity against Rubella in our health care students is low and needs consideration for Rubella vaccination.

INTRODUCTION

Rubella as a clinical entity was first described by German authors in the mid 18th century. Although it is a mild exanthematous illness, because of the immense teratogenic potential of the virus, it can have disastrous consequences in women of childbearing age group if contracted during early pregnancy. Since more than half of all cases are subclinical the exact disease load in the community cannot be made out clinically₁. Hence an active surveillance is required to determine the number of cases and to identify those who are vulnerable to infection and are at risk of giving birth to congenitally malformed children. In light of the proven efficacy and safety of the RA27/3 based rubella vaccine, WHO recommends its use in all countries where control or elimination of CRS is considered of public health importance₂.

Several studies were conducted in the past to find out the prevalence of Rubella and identify the extent of problem concerning the Rubella immunization in child bearing age group. The present study is designed to find out the immune status for Rubella in otherwise healthy women of childbearing age group in this part of Kerala in India with aim to motivate the vulnerable group for vaccination.

MATERIAL AND METHODS

Blood samples were collected from 124 healthy, unmarried health care students after getting informed consent for serological estimation of IgG antibodies against Rubella. The age of the participants ranged from 18-24 years. The study population included two groups – Group A of medical

students and group B of paramedical students including nursing students. History of MMR in the childhood or recent Rubella vaccination, or possible Rubella infection in the past was elicited. All the serum samples were tested for estimation of serum IgG antibodies against Rubella by ELISA using the commercially available kit from Equipar in a fully automated ELISA processor (Dynex – Lilac). The test was standardized with positive, negative and cut off controls and results are interpreted as positive (>20 IU/ml), negative (<15 IU/ml) and equivocal (>15 IU/ml - <20 IU/ml) with the conclusion that a positive result indicates immunity to Rubella and a negative result indicates no immunity to Rubella. All equivocal results are retested.

RESULTS

Out of 124 health care students, 49(39.5%) were medical students and 75(61%) were paramedical students; all were in the child bearing age group ranging from 18 to 24yrs. Majority, 74(60%) belonged to lower socioeconomic group. None of the girls give history of immunization with MMR in childhood or rubella vaccine in adolescence.

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Out of the 124 screened, 73(58.8%) were found to be possessing protective levels of IgG against Rubella, 42(33.8%) were negative and the rest 9(7.2%) were showing equivocal results.

DISCUSSION

Rubella has a worldwide distribution and is normally a mild childhood disease. A major section of women are immune

by the time they reach childbearing age from childhood exposure to Rubella infection or immunization. However periodic epidemics occur among children and

spread to involve the small portion of susceptible adult women leading to epidemics of CRS₃. Since the clinical diagnosis is inaccurate seroepidemiological data provides a more accurate assessment of the age specific incidence rates.

The present study is designed to identify the number of Rubella susceptibles in women of child bearing age of both low and high

socioeconomic status, and are at risk of contracting the disease during pregnancy. The study also serves to help the medical and paramedical students in prevention and control of Nosocomial infections with Rubella with vaccination. The results show that 42(33.8%) of the participants were seronegative for Rubella and hence at risk of contracting the disease. In previous similar studies Rubella immunity of 75-80% among females of child bearing age group has been reported in mid 70s from different parts of India₃₄. Two decades back Seth et al (1985) reported that the seropositivity in the age group 15-19 years in urban Delhi was 79.5% whereas it was 70% in rural areas of Delhi₅. A recent study from Delhi in 2005 indicates that seropositivity in this group is 82.17%₁. In the same age group percentage of seropositivity was 60% in Calcutta₆. This figure correlates with that of our results. In a major study by Tookey et al among different ethnic minority groups in England, Scotland and Wales 15% of Srilanken women were found to be susceptible to Rubella including 23 % of those who were in their first pregnancy who hail from low vaccine uptake areas₇.

Around 7.2% of participants gave equivocal results even on repeated testing. Controversy exists as to the 15 IU/ml cut off since it was arrived empirically in the first place. It is quite clear that lower levels of antibody such as 10 IU/ml would probably be protective as well. In a study by Scindzel L.P et al a putative protective level of at least 10 IU/ml of anti Rubella antibodies was found to have sustained Rubella specific immunity. The study also indicates that repetitive environmental exposures and infection are not absolutely

required for maintaining long term viral antibody responses₈₉.

None of the participants in present study maintained a recorded past immunization history. Even though Kerala is far ahead of other states in India in many health standards this clearly shows the lack of awareness about the disease and vaccination records.

All the seronegative participants in the present study were counseled for vaccination to avoid the risk of contracting the disease during pregnancy. In view of higher seronegative rate in the present study the best option remains with combined immunization policy as adopted by most European countries and United States, where first dose of MMR is offered at 15-18

months of age and second dose of MMR or Rubella at 12-14 years of age. We should continue with more serosurveillance studies for Rubella antibodies among representative samples of young women which can be a sensitive tool to monitor the risk for CRS in a population. Such studies will facilitate comparison between Rubella control efforts and other health priorities

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Author Information

Chithra N. Valsan, MD

Assoc. Prof of Microbiology, Jubilee Mission Medical College and Research Institute

T.V. Rao, MD

Prof and HOD of Microbiology, Jubilee Mission Medical College and Research Institute

Suseela J Innah, MD

Assoc Prof of Pathology, Jubilee Mission Medical College and Research Institute

PT Raji, MSc Microbiology

Trainee, Dept of Microbiology, Jubilee Mission Medical College and Research Institute