Rubella seroprevalence and demographic feature analysis in pregnant women from Southern Pakistan

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Abstract

The present study was conducted to estimate the prevalence of rubella infection in pregnant women of district Lakki Marwat leading to foetal death, abortion, premature birth or congenital rubella syndrome. A total of 200 blood samples were collected from pregnant women visiting different maternal health care centers of the study area. Sera samples were tested for rubella-specific IgG and IgM antibodies through ELISA. The overall sero-positivity rate for IgG was 16% and for IgM was 2.5% in the pregnant women respectively. A higher sero-positivity rate was observed in the age group of 26-33 years. Women of rural areas showed higher sero-positivity rate than urban areas. The high sero-prevalence of rubella in the pregnant women of the study area poses a serious threat to the developing foetus.

Keywords: IgM, Lakki Marwat, Pregnant, ELISA, IgG.

Methods and Results

The study was carried out in district Lakki Marwat, a southern part of Khyber Pakhtunkhwa.

A total of 200 Blood samples were randomly collected from pregnant women from December 2014 to May 2015 visiting different healthcare centers of the study area. Each woman was asked questions on Rubella infection by a proper format. Sera was separated from the blood and were tested for rubella-specific IgG and IgM antibodies through ELISA (enzyme linked immunosorbant assay).

Ethical clearance was obtained from the institutional review board of the Kohat University of Science and Technology, Kohat.

Data were analyzed through appropriate statistical tests using SPSS software version 18.

Females aged 18-41 years constituted the study population. Table1 shows the prevalence of rubella related to the demographic characteristics of the participants. Their ages range between 18-41 years with a mean of 28.90 ± 7.25 years.

When the sero-positivity ratio of rubella among the participants was tested, a higher prevalence of rubella specific IgG and IgM antibodies was observed in the age group of 26-33 years (n=17.46%) than other age groups. High rate of IgG and IgM antibodies was observed among pregnant women of rural (IgG=19.70% and IgM=2.91%) areas than those of urban areas. With respect to education level, it was observed that sero-positivity ratio and education had an inverse relationship to each other. Housewife and women of low economic status showed higher positivity rate of both IgG and IgM (Table-1).

Clinical feature as a rash showed high positivity in IgG(34.28%) cases, while joint pain was found in a higher proportion in women with IgM antibodies.
in age and were found higher among the women of 33-38 years of age. IgG and IgM antibodies increased gradually with the rise in age and were found higher among the women of 33-38 years. Our study is also in accordance with the study by O. Olajide in Nigeria.8

**Discussion**

Across the globe there is a considerable variation in the prevalence of rubella among women of child bearing age. In the present study, we found that 16% women were positive for IgG and 2.5% for IgM antibodies respectively, against rubella virus infection.

It was also observed in the current study that frequency of IgG and IgM antibodies increased gradually with the rise in age and were found higher among the women of 33-38 years. Our study is also in accordance with the study by O. Olajide in Nigeria.8

Women residing in areas showed a high positivity (IgG=18.8% and IgM=2.5%) than women living in urban areas (IgG=12.04% and IgM=2.4%). This may be due to improper management, less of education and poor hygienic conditions.

Our findings indicate that education and rubella virus infection are in inverse proportion to each other. This could be due to fact that educated women have more knowledge on employing preventive measures against rubella and have the tendency to get their children vaccinated than the less educated women.
infectious diseases.\textsuperscript{9}

Analyzing RUBV infection among the study participants on occupational basis, it was observed that housewives were at a higher risk for rubella virus infection compared to farmer and employed women. This could be due to the fact that housewives live in larger families and experience crowding, which can facilitate RUBV transmission via close contact.\textsuperscript{9}

Observing the positivity rate related to the trimester of pregnancy it was found that women in the 3rd trimester were more positive for IgG (20.37\%) whereas women in 2nd trimester for IgM (3.52\%). This shows that prevalence rate increases with gestational age, which may be due to the fact that most pregnant women start seeking medical care when pregnancy advances.\textsuperscript{10}

Rubella infection becomes noticeable due to the appearance of the rash. In this study it was observed that women presenting with the rash had a higher positivity rate for both IgG (34.28\%) and IgM (5.71\%). But generally it is known that clinical features do not play a dominant role in the prevalence of such infections.

Conclusions
A lot of women were antibodies positive against RUBV infection suggestive of placing many unborn babies to a high risk for acquiring rubella infection.

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References