

SEROLOGICAL STUDY OF RUBELLA INFECTION

by

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Introduction

For more than 200 years after its recognition, rubella (German Measles or three day measles) was reported as one of the milder rash diseases common in children. The viral nature of the causative agent was established in 1938 by inoculation of filtered throat washings into volunteers by Hiro *et al.* In 1941, Sir Norman, McAlister Gregg, observed the association of rubella in pregnant mothers with the occurrence of congenital defects in their infants. The isolation of the virus was reported in 1962 by two groups of investigators, Weller *et al* (1962) and Parkman *et al* (1962). Rubella retains the unique attribute of being the first disease for which immunisation of one generation is being encouraged with primary goal of preventing disease in the next (Paul *et al* 1978). Absence of rubella antibodies in blood is suggestive of susceptibility to rubella. Since vaccine against rubella is already in the market a

surveillance of rubella is important and is a basic criteria for the immunisation programme of the susceptible population. The present paper deals with the study of the pregnant women and female children in the age group of 10-15 years to know the general pattern of rubella antibodies among the female population in Rohtak.

Material and Methods

A total of 400 blood samples were collected out of which 200 belonged to pregnant women and the rest 200 to females between 10-15 years age group. All the blood samples were collected aseptically and allowed to clot at room temperature. Sera were separated with sterile precautions and kept at -20°C till tested.

TABLE I
Age Distribution in Pregnant Women

Age group in years	No. of blood samples collected
15-19	23
20-24	106
25-34	69
35	2
Total:	200

Rubella haemagglutination antigen was obtained from Flow Laboratories Scot-

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land. Microtitre 'U' plates, microdiluters and microtitre pipettes were used exclusively in this procedure (Sever, 1962). Serum specimens for Haemagglutination Inhibition test were treated with Kaolin

noting down the serum dilution completely inhibiting the haemagglutination.

Results

The results of the study were as follows:

TABLE I
Incidence of Rubella HAI-antibodies in Pregnant Women

Age group in years	No. of cases tested	No. of positive	Percentage of positive
15-19	23	20	86.9
20-24	106	100	94.3
25-34	69	66	95.6
35	2	2	—
Total:	200	198	94.0

TABLE II
Incidence of Rubella HAI-antibodies in Non-pregnant Females

Age group in years	No. of cases tested	No. of positive	Percentage of positive
10-11	54	51	94.4
11-13	67	60	89.5
14-15	79	72	91.1
Total:	200	183	91.5

and chicken red cells according to the arbovirus technique (Work, 1964) with minor modifications (Halonen *et al* 1967) in order to absorb non-specific inhibitors of agglutination and non-specific haemagglutinins for chicken red cells from sera. The highest serum dilution causing complete inhibition of haemagglutination was considered as the antibody titre. Four controls were put. Serum control to detect non-specific haemagglutinins, antigen control to determine the actual reactive units of antigen which went into the test, cell control to determine autoagglutinability of the chicken red cells used in the test. Human positive control serum having a titre of 1:640 was run with each test. All the controls were checked before

It showed that 91.5 per cent of the non-pregnant females in the age group of 10-15 years had HI antibodies. Non-pregnant females in the higher age group were not included in the study because earlier studies have shown that percentage of positivity remains relatively constant in higher age groups. Chi-square values in inter age group showed that none of the differences were statistically significant. Of 200 sera from pregnant women tested, 188 (94 per cent) were found to have rubella antibodies. Chi. square values showed no statistical difference in age group.

Discussion

The mild exanthematoes rubella has drawn much attention now-a-days due to

its teratogenic potential. A number of studies have been carried out all over the world to study the immune status of women during child bearing age, for infection against rubella virus. There are a few reports from India demonstrating Clinical (Veale, 1866; Skidar, 1930) or serological (Seth *et al* 1971); Chakarborty *et al* 1973; Mathur *et al* 1974; Pal *et al* 1974; Chakarborty *et al* 1976) evidences for the existence of rubella infection in the population. In most parts of the world where sero epidemiological studies have been carried out, not more than one fifth of the women of childbearing age are devoid of rubella antibody. Similar findings have been reported from other cities in the north. Seth *et al* (1971) reported an incidence of 77.5 per cent to 88 per cent in Delhi and neighbouring areas 93.9 per cent was reported from Lucknow by Mathur *et al* (1974), but Chakarborty *et al* (1973) reported a lower incidence (53.14%) from Calcutta. A higher incidence (63.4%) in age group of 10-15 years was reported from Calcutta by the same authors in 1976. This study suggests that rubella infection is common in India and the obstetricians should think of it in cases of children born with congenital abnormalities and proceed for investigations accordingly.

Summary

Two hundred sera from non-pregnant

females in the age group of 10 years to 15 years, were tested for rubella antibody by HI tests and the incidence was found to be 91.5 per cent. Two hundred sera from pregnant women of different age groups ranging from 15-35 years attending the Antenatal Clinic of Medical College Hospital, Rohtak were tested and the incidence was found to be 94 per cent.

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