IS ESTIMATION OF THE RUBELLA SERUM ANTIBODY LEVEL OF THE WOMEN BEFORE MARRIAGE JUSTIFIED?

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SUMMARY: 52 pregnant women, not vaccinated at all in their lives against rubella, came intentionally in contact with a patient suffering from Rubella infection. After this exposure their immune status have been determined. The fear of these pregnant women to bear a disabled child was behind this seroepid study.

67% of them were already immune as a result of previous infection.

17% of them were despite this exposure still not infected, they are now susceptible to the Rubella infection. Only 15% of them contract the Rubella infection, most of their infants are really at risk to be born disabled, because they were in the first trimester.

That fear can be abolished, by routine vaccination against Rubella, prior to marriage especially in the developing countries, where adult females are rarely vaccinated against Rubella.

Key Words: Rubella, immunity, antibody.

INTRODUCTION

The pathological significance of rubella virus lies in its teratogenic effects on the developing foetus (7,15). Some of the generally accepted rates for subsequent anomalies are reported as 50%, 20% and 4%, if maternal rubella occurs within the first, second and third trimesters of pregnancy respectively (4), whereas if rubella infection is contracted in the first four weeks the foetus will almost certainly be damaged (15).

Rubella infection after the first trimester is mostly benign (7). The timing of the initial infection determines the type of the teratogenic effects, in practice it is difficult to pinpoint the time of exposure (4).

The disease occurs worldwide and tends to produce epidemics at intervals (6).

If rubella antibodies are present before or within ten days after exposure of the pregnant mothers, these patients are considered immune against the infection and the risk of foetal damage is virtually nil (5,8). It is generally accepted that risk of the infection is greatest following household contact (12), the dose of virus delivered appears to be a major factor (9). The disease is now considered as a chronic infection, its silent form

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is more common than that of the symptomatic (13). Studies have shown that the incidence of congenital rubella is higher in first born baby, this emphasizes the need for rubella vaccination prior to a woman's first pregnancy (11), therefore the rubella vaccination should be a part of the well baby routine (16).

In USA the incidence rate dropped from 62/100000 live birth in 1969 to 2/100000 live births in 1987 (17) after introducing the rubella vaccination.

The fear and stress of pregnant women bearing a disabled child through a symptomatic maternal rubella infection can be easily abolished by ascertaining their immune status, by history of previous vaccination or by serological testing; either before marriage or before conception as early as possible in pregnancy (4).

The serological examination is highly required and must be considered as an emergency measure (18). Detection of specific rubella (IGM) antibody in acute phase may be used for diagnosis of acute rubella (4). The main objective of this research work is to save the children (new generation) from disability; through:

Firstly:

Mass vaccination against rubella of all adolescent school girls irrespective of their immune status and also to all non-pregnant women, who lack rubella antibodies, since the MMR vaccination is not widely used in the developing countries.

Secondly:

Checking of the rubella serological immune status against rubella for every women before marriage or prior to the first pregnancy.

MATERIALS AND METHODS

Two paired sera from 52 non-vaccinated pregnant women, who have been immediately exposed to patient suffering from rubella infection were taken, in order to check their immune status, through detection of specific rubella IgM and IgG by using rubella (IgG) haemagglutination test and rubella IgM elisa test (Organon, Oss Holland).

All these women have been never vaccinated against rubella previously as it approved in their own history.

This study has been performed in the central public health laboratory in Baghdad (1989-1990).

RESULTS

The results achieved are summarized in the following tables:

Table 1: Illustrate the distribution of the non-vaccinated pregnant women according to their trimester of pregnancy.

	First Trimester	Second Trimester	Third Trimester
non-vaccinated pregnant women	26 (50%)	20 (38%)	6 (12%)

Table 2: Demonstrate the time of exposure in months and the immune status of the non-vaccinated pregnant women.

months	1	2	3	4	5	6	7	8	9	total
not infected	1	3	-	2	-	1	-	2	-	9
immune	-	13	3	9	5	2	1	2	-	35
infected	-	5	1	-	-	1	-	1	-	8
total	1	21	4	11	5	4	1	5	-	52

DISCUSSION

The sera of 52 pregnant women, who came recently in contact with a patient suffers from rubella infection (mostly their own small child) were serologically checked.

It is well documented that the main source of mothers infection is her own children, who contract the infection from other pupils at the school (3,12).

The vast majority of these patients 26/52 (50%) were in the first trimester, therefore their infants were highly at risk (4).

20/52 (38%) in the second, and only 6/52 (12%) were in the third trimester (as in Table 1).

67% (35/52) of the pregnant women showed specific IgG which means they have had a previous contact with the virus (as in Table 2). They all denied to be vaccinated against rubella in the early childhood or at any time in their life. This fact correlates favourably with the prevalence rate or rubella infection in Nigeria

(73%) (3), which is a result of the absence of the rubella mass vaccination. In contrast in Jeddah (Saudi Arabia) 93% of the pregnant women had anti rubella antibodies (13). Approximately 80% of women in child bearing age are immune to rubella in USA (18).

The presence of rubella antibody implies protection against subsequent disease (8).

17% (9/52) of them were serologically negative, they lack any specific rubella antibodies (IgG and IgM). That means they had been never come in contact with rubella virus, therefore they are now unprotected, this correlates fairly well were with the susceptibility rate to rubella among the American women of child bearing age, which ranges from 10-25% (5) or within the range of seronegativity rate in Saudi women which is from 4.7% to 29% (2). These women should urgently be vaccinated against rubella after their delivery (10).

Only 15% (=8/52) of the pregnant women in our study contracted the infection, they showed specific rubella antibodies (positive IgG and IgM test) as a result of the recent exposure and most of them were in the first trimester (Table 1). Their infants were really at risk to be disabled, therefore they need urgently medical intervention, although the therapeutic abortion is not usually accepted on religious grounds in Iraq, and the care for those disabled children are expensive and life long (3).

In England between (1970-1981) over 4000 abortions were performed because the mother contracted rubella or came in contact with it during pregnancy (17).

If we consider the expectation of Stewart (15); that in a population of 10.000 persons during one year 4 women are faced with the dilemma of terminating their pregnancy or of taking the risk of a rubella damaged baby; that means we may register about half million disabled child in every single year in the Islamic world, because of their mothers were not vaccinated against rubella.

It is worth to mention, moreover, the incidence of the congenital rubella syndrome rose to 2% during the 1954 pandemic USA (1), with 20.000 infants born with various defects; this event had cost the USA economy 2 billion dollars (1).

In the W. Germany most of the school girls in the age group 11-14 years were vaccinated against rubella (10) since their objective of the rubella vaccination is to prevent congenital rubella disabilities.

In the UK it is recommended that all girls should be offered the vaccination at puberty (20).

In USA all children (girls and even the boys) are offered the vaccine, in an attempt to eliminate the disease completely from the community (Ig).

Immediate ante natal screening for the estimation of the immune status against rubella for all pregnant women is urgently required in our countries, although it is costly, but it is cheaper than the total cost of caring for and rehabilitating the congenitally rubella disabled children.

CONCLUSION

The best measure to prevent congenital rubella infection is to demand the vaccination certificate from all women, who decide to marry, and to consider that as an official marriage requirement demanding by the government courts.

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