Prevalence of rubella IgG antibodies among Syrian females of childbearing age

To the Editor

I read the interesting study by Barah and Chehada[1] on the prevalence of rubella IgG antibodies among Syrian females of childbearing age. It is evident that the complete elimination of children's contagious diseases, including rubella, has not yet been accomplished, as various outbreaks still occur. In the recent past, the numbers of infections of teenagers and adults with these diseases have been increasing. The course of the infections in these cases is often severe and might result in serious consequences.[2] I have 3 comments on the aforementioned study.

First, the seropositivity against rubella addressed by Barah and Chehada[1] was estimated to be 85.6% in the studied women and seronegativity in the remaining 14.4%. The latter was most likely related to the antecedent exposure to rubella virus rather than previous vaccination. Mandatory national vaccination schedule against the common infectious diseases, particularly rubella, was lately implemented in Syria in 1999 despite the incorporation of MMR (measles, mumps, rubella) vaccine into the vaccination schedule was worldwide recommended in 1990.[3] The high prevalence of the seropositive women against rubella (85.6%) stated by Barah and Chehada[1] casts suspicion on the true prevalence of rubella in Syria as it is unknown whether the studied women had in their early lives subclinical or overt rubella. The protective immune responses against rubella virus are related to its neutralizing epitopes, an issue that is important to consider when assessing the immune status of patients with remote infection. That neutralizing epitope corresponds to amino acids 208 to 239 of the E1 glycoprotein (SP15). In an Argentinean study,[4] the SP15- enzyme immunoassay (EIA) was developed and a comparison was made between hemagglutination inhibition assay (HIA) and SP15-EIA to detect antibodies against rubella in the remote rubella infection. The study showed that SP15-EIA is very specific and sensitive for detecting protecting antibodies (specificity, 100%; sensitivity, 98.2%). It also demonstrated that antibodies against the neutralizing domain represented by SP15 would be important in the memory response after the natural infection and might be a good tool in the determination of the true immune status of patients with remote rubella infection.

Second, the effectiveness of rubella vaccination is well-documented. Seronegative persons are greatly vulnerable to catch rubella. And, the seropositive persons are not totally immune against rubella though the 10 IU/mL rubella antibody level was found to be protective in the vast majority of persons. Sporadic reports of viremia and/or reinfection among previously immunized persons with low antibody levels have been reported, but proven cases of reinfection have also occurred in persons with titers greater than or equal to the 15 IU/mL cut-off.[5] Moreover, various studies have demonstrated that the immunity against rubella wanes several years after initial vaccination and that those near adolescence have remarkably low rubella antibody titers.[6-9] In order to attain the goal of full protection of population, particularly women of childbearing age, alternative strategies are recently proposed that need to be evaluated. These include routine screening for rubella immunity prior to the first pregnancy, offering individuals with uncertain immunity a booster dose, and/or routine administration of an additional dose of MMR vaccine to all young adults before they leave the educational system.[10]

Third, based on the data installed by Barah and Chehada,[1] strict adherence to the national vaccination programme, regularly administered boosting rubella vaccine to all adolescent women, and periodic epidemiologic surveillance for rubella could significantly curtail in Syria the spread of rubella and its grave consequence of congenital rubella syndrome.

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Reply from the Author

I read with interest the valuable comments by Prof Al-Mendalawi related to our study (Prevalence of rubella IgG antibodies among Syrian females of childbearing age) that was published in the SMJ in January 2010 issue.[1] In response to his comments, we would like to present the following notes.

In this study, we were interested on knowing the general information related to the epidemiology of rubella antibodies among Syrian females of childbearing age. We were not interested to know if positive individuals had previous symptoms related to rubella or not. Clearly, we were also not interested to detect recent or active infection among those who showed positivity for the IgG; which is usually decided

by detecting IgM antibodies or determination of IgG avidity. Our main interest was to identify percentage of negatives in our target group. Those who were negative are at risk in getting rubella infection for the first time during pregnancy leading to a possible consequence of congenital rubella syndrome.

We would assume that the immune system would produce different antibodies, either protective or not. Of course, if antibodies detected were not responsible for protection, number of susceptible Syrian females of childbearing age to rubella infection would increase more than is reported in our study. However, we believe that even 14.4% of susceptibility obtained from our test group should drive more attention to the possible consequences affecting the fetus if the infection occurs during pregnancy.[1] We totally agree with Prof Al-Mendalawi that a positive result in our study clearly does not rule out the need to detect the IgG antibodies during the beginning of the pregnancy, due to the fact that antibodies titer may drop by time. This is also applied to vaccinated individuals. However, the titers of the IgG antibodies obtained in our research either near the cut-off or much higher does not conflict with the main aim of the study since we were looking for negatives in the target group. We would assume that number of negatives among these individuals would increase if they will be tested again; lets say after 2 years.

As we concluded in our paper, our results showed a relatively high percentage of unprotected women at childbearing age against rubella. Screening for protective immunity followed by vaccination to those who missed the regular vaccine program should be enforced to prevent possible rubella congenital syndrome. We could also assume that, adding a second shot of rubella vaccine to those who were subject to the national program of vaccination is a must since the concentration of antibodies may drop below the recommended levels necessary for protection.

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