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Letter to the Editor

Immunity against varicella zoster virus based on history of previous chickenpox: a study in premarital Iranian women

Maternal primary chicken pox infection in the early months of pregnancy leads to congenital varicella syndrome in 2–3% of fetuses, who present with symptoms including skin scars, limb deformities, central nervous system (CNS) impairments, and eye defects, which unfortunately cannot be treated.[1] Chicken pox is an extremely contagious disease transferred via the respiratory system and skin contact.[2] In most cases, chicken pox occurs during childhood, and one's history of infection may be forgotten.[3] In developed countries, vaccination against this virus is performed routinely with very good immunity coverage.[4] In the case of contact with an infected individual, a pregnant woman should immediately be checked for varicella zoster antibodies so that she can be managed accordingly.[5]

The aim of this study was to determine the level of immunity among women of reproductive age in Kerman Province in the southeast of Iran, because routine evaluation of all pregnant women for immunity is not possible or cost-effective.

After obtaining 2–3 ml blood, serum was isolated. An ELISA was performed with an IgG-specific varicella zoster virus ELISA kit (LIAISON; Hamburg, Germany). Counts lower than 9 IU and equivocal values (9–11 IU) were considered negative.[6] This test is the gold standard for large serological surveys because of its high sensitivity and specificity and its ease of use.[6]

Of the 723 study participants, 89.35% had serological evidence of varicella immunity. Of those participants who reported having had chicken pox disease, 94% had serological evidence of varicella immunity. Eighty-five percent of women who reported a negative or uncertain disease history, were seropositive for varicella antibodies. Immunity is directly related to a history of chicken pox disease and is conversely correlated with maternal education ($p < 0.05$).

The mean age of participants was 24.1 ± 6.3 years. There was no significant difference between immune and non-immune participants with regard to mean age (24.18 and 23.2 years, respectively; $p = 0.21$). Each additional year of age was associated with a 1.2-fold increase in immunity (Table 1). Among all the participants, 48.8% had a history of chicken pox, 40.1% asserted no previous disease, and 11.7% did not know their infection history.

The necessity of chicken pox vaccination in Iran is one of the challenges of health policy makers. The results of this study suggest that chicken pox vaccination for the prevention of congenital varicella syndrome is not a health priority in our community. The increased severity of varicella in adults and pregnant women supports screening strategies to identify susceptible women. The cost–benefit analysis of immunity testing in individual cases according to history will require additional study in other parts of the country.

Funding: No specific funding was received for this study.

Ethical approval: Women needed blood drawn as part of their routine pre-marriage test, and after signed consent was obtained, they were enrolled in the study. There was no need for ethical approval.

Conflict of interest: No conflict of interest to declare.

Table 1
Relationship between odds of seropositivity and some other variables

Variable	OR	95% CI	*p*-Value
Linear effect of age	1.02	0.98–1.06	0.33
Linear effect of subject's education	1.12	0.89–1.42	0.33
Linear effect of mother's education	0.94	0.75–1.19	0.63
Linear effect of father's education	0.88	0.70–1.08	0.22
Place of birth			
Urban	1	-	-
Rural	1.26	0.74–2.16	0.39
History of chicken pox			
Yes	1	-	-
No	0.35	0.20–0.61	0.001
Unknown	0.37	0.17–0.78	0.009

OR, odds ratio; CI, confidence interval.

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