



Impact of Virus Infection on Adults

Bracha Rager-Zisman PhD

Department of Microbiology and Immunology, Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheva, and Office of the Chief Scientist, Ministry of Health, Jerusalem, Israel

Key words: varicella, immunity, vaccination

IMAJ 2000;2:224

The good news in the paper on varicella zoster virus in young Israeli adults by Avrahami-Heller et al., which appears in this issue [1], is that the majority of young adults in Israel have antibodies to this virus. The authors detected a statistically significant difference in the rate of immunity between the immigrant population (94.2%) and native Israelis (98.6%), but this decrease is not alarming and the rate of immunity in the immigrant population should be viewed as satisfactory.

The authors analyzed factors that they believe have a potential to influence the rate of immunity to this virus infection. They found only a trend towards a decrease in antibody titers in smokers and less educated subjects. Although lower immunity in smokers can be attributed to the overall effects of smoking on the immune system, it is difficult to assign an explanation to the less educated subjects unless exposure to VZV and herd immunity is greater in schools than outside of these institutions.

Because of its ability to produce two clinically distinct disease entities (chickenpox and shingles), VZV is an unusual etiologic agent. It first strikes as chickenpox, the highly contagious childhood disease. Although commonly regarded as benign, it can in some cases cause considerable discomfort, as well as fever, headaches, loss of appetite, and itching skin lesions that may leave scars. It can also lead to serious complications, such as bacterial skin infections, pneumonia and encephalitis that sometimes even require hospitalization.

Like all the other viruses that belong to the same group, Herpesviridae, following the acute infection VZV enters a latent phase and reappears later in life as shingles or herpes zoster. Shingles is very painful. In immunocompetent hosts it may disappear without major consequences, but since immunity to VZV requires both intact cellular and humoral responses, it is in the aged population and immunosuppressed patients suffering from cancer, human immunodeficiency virus or after organ transplantation that the consequences of shingles can be very painful, debilitating and even fatal.

Unlike diseases such as smallpox, polio, measles and

rubella — for which the development of vaccines was welcomed with open arms — the need to mass vaccinate against VZV is still controversial. Immunization of seronegative adults and healthcare workers is highly recommended. Also, with the increasing seroprevalence of HIV infection, more patients will be stricken with zoster (at a younger age) and disseminated varicella. Thus, the ability to vaccinate against this virus has clinical significance. Nonetheless, it is still being debated whether healthy immunocompetent children should be immunized with yet another vaccine to prevent a relatively mild disease such as chickenpox.

Whether vaccination against VZV will provide protection against the development of shingles is far from clear. A recent study by Zerboni et al. [2] showed the persistence of humoral and cellular immunity to VZV at a mean of 5 years after immunization. This finding is encouraging but still does not provide evidence for the protective or preventive potential of the vaccine after much longer periods.

The article by Avrahami-Heller and team provides information on the humoral but not on the cellular immune status of young adults in Israel. Whether this immunity will protect these individuals from the development of shingles has yet to be investigated.

On the basis of their data showing such a high rate of natural immunity to VZV, it will be hard to advocate the institution of a national vaccination program of healthy children against this virus. Were this vaccine to reduce the incidence of shingles, the case for vaccination would be far stronger.

References

1. Avrahami-Heller Y, Cohen D, Orr N, Slepion R, Ashkenazi I, Danon YL. Immunity to varicella zoster virus in young Israeli adults. *IMAJ* 2000;2:196–199
2. Zerboni L, Nader S, Aoki K, Arvin AM. Analysis of the persistence of humoral and cellular immunity in children and adults immunized with varicella vaccine. *J Infect Dis* 1998;177(6):1701–4.

Correspondence: Dr. B. Rager, Chief Scientist, Ministry of Health, 2 Ben Tabai St., Jerusalem 91010. Tel: (972-2) 568 1208/9; Fax: (972-2) 672 5833; email: bracha.rager@moh.health.gov.il

VZV = varicella zoster virus

HIV = immunodeficiency virus