

Prevalence of Anti-Varicella Zoster IgG Antibody in Undergraduate Students

Parvapan Bhattarakosol, Sunisa Chantarabul, Kunthon Pittayathikhun, Vanida Mung-mee, Vanna Punnarugsa

Varicella-zoster virus (VZV) causes 2 distinct clinical symptoms: varicella or chickenpox and zoster or shingles. Varicella is a ubiquitous, highly contagious, generalized exanthem that spreads rapidly in susceptible populations while zoster is a less common disease that usually occurs in older or immunocompromised individuals.¹ Varicella results from a primary VZV infection while zoster is a reactivation of latent VZV acquired from a previous episode of varicella. Varicella has a worldwide distribution and generally occurs in children between 4 and 10 years of age. Prevalence rates of anti-VZV between 90-100 % have been reported in children below 15 years old.²⁻⁴ However, shifts in age distribution have recently been reported.^{5,6} Adult varicella is more common in the tropics than in temperate zones.⁷⁻¹¹ In normal children, systemic symptoms are usually mild with rare serious complications. In adults and in the immunocompromised, the eruption of varicella is

SUMMARY Sera from 74 healthy Thai undergraduate students, mean age 21+1.7 years, were tested for the presence of IgG antibody against varicella zoster virus (anti-VZV IgG) by ELISA. Fifty five of 74 (74.3%) individuals possessed anti-VZV IgG antibody. The presence of anti-VZV IgG was associated with a past history of varicella ($p < 0.005$, $X^2 = 33.4989$). No sexual preponderance was observed. We therefore found that 1 of 4 Thai young adults was susceptible to VZV infection.

more extensive, and high fever, severe constitutional symptoms, pneumonia, and other life threatening complications occur more often.¹²

An increasing number of varicella cases in patients aged 13 years or older was recorded during 1991-1993 at the Dermatology Clinic, Chulalongkorn Hospital. The highest incidence occurred in patients between the ages of 20 to 24 years; and this age group accounted for about 40% of the total number of cases. We reported here the investigation of the prevalence of anti-VZV IgG antibodies in healthy Thai young adults.

SPECIMENS AND METHODS

Blood samples were obtained from healthy undergraduate students

enrolled at Chulalongkorn University, Bangkok, Thailand during 1994. About 5 ml of whole venous blood was collected from each subject and sent to the Virology Laboratory. The sera were separated and kept at -20°C . All donors were interviewed for a past history of varicella infection.

The anti-VZV IgG antibody in sera was determined by a commercial indirect ELISA kit (Human, Germany). Briefly, specific antibodies in serum are bound to VZV antigens coated on microtitre strip wells. Unbound materials are removed by

From the Department of Microbiology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.

Correspondence : Parvapan Bhattarakosol

Table 1. General characteristics of subjects.

Age (years)	17-25	
	Mean	21
	Mode	20
	Standard deviation (SD)	1.7
Sex	Female	51 (69%)
	Male	23 (31%)
	Total cases	74
Past history of varicella	Yes	43 (58.1%)
	No	13 (17.6%)
	Uncertain	18 (24.3%)

Table 2. Association between seropositivity and past history of varicella.

Past history	Anti-VZV IgG		Total
	Positive (%)	Negative (%)	
Yes	42 (97.7)	1 (2.3)	43
No	3 (23.1)	10 (76.9)	13
Uncertain	10 (55.5)	8 (44.5)	18
Total (%)	55 (74.3)	19 (25.7)	74

* $P < 0.005$, $\chi^2 = 33.4989$

washing and peroxidase conjugated anti-human IgG is added. TMB (tetramethylbenzidine) was used as substrate for the demonstration of anti-VZV IgG antibodies. Positive and negative values were calculated according to the manufacturer's instructions. A positive result indicates previous exposure to VZV. The data was analysed by chi-squared test.

RESULTS AND DISCUSSION

Seventy four healthy undergraduate students of Chulalongkorn University (mean age 21 ± 1.7 years) were included in the study. Their characteristics are summarized in Table 1. Fifty five (74.3%) possessed anti-VZV IgG antibodies (Table 2). One out of 43 subjects with past history of varicella did not show

anti-VZV IgG antibodies with the test. Possible explanations for the apparent false negative anti-VZV result include low antibody level falling below the threshold of sensitivity of the test or incorrect history of varicella. Clinical reinfection with VZV may occur in this setting.^{13,14} We also demonstrated that 3 of 13 (23.1%) subjects who had no previous history of varicella had measurable anti-VZV IgG (Table 2). This discrepancy could be due to an unreliable history. The association between past varicella by history with anti-VZV IgG was statistically significant ($p < 0.005$, $\chi^2 = 33.4989$; Table 2). There was no significant association between either age and seroprevalence ($p > 0.05$, $\chi^2 = 0.2823$) or age and past history of varicella ($p > 0.05$, $\chi^2 = 3.4627$). Anti-VZV IgG antibodies occurred in 19/23 (82.6%) of males and 36/51 (70.6%) of females ($p > 0.05$, $\chi^2 = 1.199$).

In 1985, Kositanont and colleagues¹⁵ studied susceptibility to VZV important because of both its severity and also its risk of transmission from pregnant women to fetus and newborn. Therefore, data on prevalence rates of varicella infections are useful for helping to set VZV vaccination policies in Thailand.

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