

Abstract

Japanese encephalitis (JE) is an important encephalitis in Taiwan. The endemic season is from May through October. It is caused by a flavivirus. In Taiwan, the major amplification host of JE is pig. It is transmitted from animal to human via mosquito bite. Many factors were known to affect the protection efficacy of one's neutralizing antibodies. Among these factors, sufficient number of vaccination, time after the latest immunization, antigenic heterogeneity and the frequency of natural infection are of the most important.

Because of the mass vaccination program starting from 1968 in Taiwan, in the past 30 years dominant population of JE confirmed case has gradually shifted from children to those more than 10 years old. Recently, the lowest positive rate of neutralizing antibody was observed among people of 20-40 years old. Therefore, the capability of college students to neutralize JE virus became one of the most concern topics in public health.

This project was conducted to compare positive rates and titers of neutralizing antibodies against one JE vaccine strain (Nakayama) and two JE wild strains (CJN and TN207) among college students. Antibodies titers before and after prevalence season were also compared. Four residential areas in this study were selected according to the prevalence of JE in pig. One hundred and thirteen male and 167 female volunteers were enrolled in this study. All are college students of 19~22 years old. After prevalence season, blood samples of 73 male and 138 female among these volunteers were collected.

Titers of antibodies in blood samples before and after prevalence season were analyzed by plaque reduction neutralization test (PRNT), with 70% of plaque reduction as the criteria of seropositivity. Seropositive rates against Nakayama strain were higher than that against two wild JE strains. Seropositive rates among different residential areas were significantly differed. However, titers of neutralizing antibodies were found not different among the residential regions. Four times of booster in neutralizing titer were not observed after the prevalence season.

The results indicated that the protections of 4-doses vaccination in college students born in 1981~1984 were still observed. However, their immune responses against vaccine strain were significantly stronger than that against wild JE strains. It might be better to consider of using another JE strain —Beijing, to evaluate the efficacy of neutralizing antibodies against wild JE strain for these people.

Keyword: Japanese encephalitis ; Neutralizing antibodies ; Plaque reduction neutralization test (PRNT)