Abstract

Because *H. pylori* infection is contracted primarily in childhood, epidemiological studies among pediatric populations are imperative. Serologic immunoassays based on *H. pylori* antigens require validation in the pediatric population under evaluation. The aims of this prospective study are: (1) to compare the suitability of serological test with ^{13}C-urea breath test as a epidemiological screening tool in children and adolescents; (2) to investigate the "true" prevalence rate of *H. pylori* infection in the population whose ages between six and fifteen; (3) to explore the risk factor of transmission of *H. pylori* infection in Taiwan. The study population included 780 students of one primary school, 629 students of one junior high school and 150 teachers. Blood samples were collected from each student and teacher for the serological test. ^{13}C-urea breath test was adopted as gold standard. Result: The sensitivity of serology in the students with age of 7, 8, 9, 10, 11, 12, 13, 14 and 15, were 33, 41, 50, 59, 68, 63, 65, 66, and 70%, respectively, while this value in the teachers were 90%. The "crude" prevalence was 5.5, 8.6, 6.8, 11.8, 12.3, 15.3, 11.9, 14.5, and 15.2% in each age group of students and 58.7% in the teachers. However, after corrected by the data of ^{13}C-urea breath test, the "true" prevalence raised to 13.6, 14.5, 13.6, 16.7, 17.9, 18.8, 16.4, 20.4, and 20.7% in each age group of students. The reference value in the teachers was 57.3%. The mean δ^{13}C value of baseline measurement of adults was significant lower than that of children (-24.6±1.3 vs. –20.9±1.2; $p<0.01$). This is probably because the Taiwanese children tend to consume more meats, egg, cane sugar, and corn products. If only a single 30-min sample was adopted to determine the *H. pylori* status, a further 5% false-positive for children and 1% false-negative for adults results would occur. When logistic regression analysis was applied on some variables for the serology-based prevalence of *H. pylor*i infection in children, age and number of children living together were two significant positive coefficients at 5% level. In siblings group, 2 of 7 (28.6%) had identical strains; 5 of 7 (71.4%) had non-identical strain within family. In parent-offspring group, 3 of 8 (37.5%) had identical strains; 5 of 8 (62.5%) had non-identical strain. The high diversity of *H. pylori* strains in both siblings and parents-children supported that the major transmission route within family was most probably community-acquired. Each sibling might also be infected from one of the parents respectively, and this might account for the diversity between them. Each family comprising both parents and more than two children will be the best design to investigate the route of intrafamilial *H. pylori* transmission. Conclusion: It is concluded that the serological test is not sensitive enough as an epidemiological screening tool for *H.*

pylori **infection in children. The baseline measurement in** ^{13}**C-UBT for detection of** ***H. pylori*** **infection should not be omitted. Age and number of children living together may be two significant positive coefficients. The major transmission route within family might be community-acquired, but intrafamiliar spreading of** ***H. pylori*** **infection would also play a role.**

Keyword: ***Helicobacter pylor*** **；** ^{13}**C-urea breath test；serology；epidemiology**