

How Common Are Coxsackievirus A6 and Coxsackievirus A16 Compared to Enterovirus 71 Infections in Singapore? A Serological Study in Children and Adolescents, 2008-2010

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Background/Objective

Coxsackieviruses A6 (CV-A6) and A16 (CV-A16), and Enterovirus 71 (EV-A71) are common etiologic agents of hand, foot and mouth disease (HFMD), a childhood viral infection. We conducted a seroprevalence study in Singapore to estimate the prevalence of neutralizing antibodies (NtAb) against CV-A16 and CV-A6, and compare with that of EV-A71.

Method

Our study involved a subset of 700 children and adolescents aged 1-17 years whose residual sera had been obtained for a national paediatric seroprevalence survey (NPSS) following the completion of routine biochemical investigations in two public acute-care hospitals. Sera were collected between 2008 and 2010, when there were peaks in HFMD cases associated with these three enterovirus types.

NtAb against CV-A6 and CV-A16 were detected by the micro-neutralization test. An antibody titer of 1:8 or higher was considered positive. The geometric mean titer (GMT) and 95% confidence intervals (CI) were calculated.

Result

The seroprevalence of CV-A6 and CV-A16 was 62.7% (95% CI: 59.1—66.2%) and 60.6% (95% CI: 56.9—64.1%), respectively. In comparison, the seroprevalence of EV-A71 among 1200 children and adolescents in the NPSS was 26.9% (95% CI: 24.5 — 29.5%).

The CV-A6 seroprevalence increased significantly from 51.9% in children aged 1-6 years to 63.6% in those aged 7-12 years, and remained stable at 65.6% in adolescents aged 13-17 years. The CV-A16 seroprevalence in the two younger age groups was similar at 50.0% to 52.0%, and increased significantly to 72.5% in the 13-17 year olds.

The GMT of NtAb against CV-A6 and CV-A16 among seropositive samples were 68.4 (95% CI: 61.6—75.9) and 63.2 (95% CI: 56.6—70.6), respectively.

Conclusion

Enteroviral infection is continually acquired from early childhood to adolescent age. CV-A6 and CV-A16 infections are very common among children and adolescents in Singapore. In comparison, EV-A71 infections are less common.