Age-specific Incidence Rates of Enterovirus 71 Infections in Young Children in Taiwan, 2008 – 13

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Background/Objective

EV71 is causing life-threatening outbreaks in tropical Asia. Nationwide EV71 epidemics occur cyclically, age-specific incidence rates of EV71 infections and the dynamics of EV71 infection-induced antibody titers are not clear. During 2008 – 13, Taiwan experienced two nationwide EV71 epidemics, which provided a unique opportunity to estimate age-specific incidence rates of EV71 infections and monitor the dynamics of EV71 infections-induced antibody titers.

Method

We prospectively recruited 749 healthy neonates during 2006-2013. Sera were obtained from participants at 0, 6, 12, 24, 36, 48, 60, 72 and 84 months of age for measuring EV71 neutralizing antibody titers. If the participants developed suspected enterovirus illnesses, throat swabs were collected for virus isolation.

Result

We detected 102 EV71 primary infections including 24 cases in 2008, 4 cases in 2009, 4 cases in 2010, 21 cases in 2011, 49 cases in 2012, and 0 cases in 2013. Detections of primary EV71 infection were based on seroconversion of EV71 neutralizing antibody from 2008 to 2013, including 60 (61%) symptomatic infections and 42 (39%) symptomatic infections. In the first nation-wide epidemic in 2008~2009, cumulative incidence (CI) rate of EV71 infection increase from 0.65 % at 6 months of age to 2.05 %, 6.46 % and 15.15 % at 12, 24 and 36 months of age, respectively. In the second nation-wide epidemic in 2011~2012, CI rate of EV71 infection increase from 18.2 % at 36 months of age to 31.3 %, 33.3 % and 33.9 % at 48, 60 ,72 and 84 months of age, respectively. We also find 8 cases developing secondary EV71 infections based on ≥ 4-fold rises of EV71 neutralizing antibody titers.

Conclusion

Risk of EV71 infections in Taiwan increased after 6 months of age. After each nationwide EV71 epidemics about 15% of children got infected. EV71 reinfection could be serologically detected and they are likely to be asymptomatic.