Clinical Characteristics of an Outbreak of Hand, Foot and Mouth Disease in Singapore

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Abstract

Background: We experienced a hand, foot and mouth disease (HFMD) outbreak in late year 2000 in Singapore. Between 14 September 2000 and 14 November 2000, a total of 3526 cases of HFMD were notified. There were 652 patients clinically suspected to have HFMD, who were seen at the Children's Emergency department of KK Women's and Children's Hospital of Singapore. Objective of the study: To study the clinical profile and virologic isolates of children admitted with HFMD during the outbreak. Study design: A prospective observational study. Methods: Analysis of clinical features and virologic studies of 129 selected cases of HFMD and herpangina. Results: The median age was 25 months with a range of between 4 months and 11 years. The majority were less than 5 years old (87%). The male-to-female ratio was 1.3:1. The median numbers of day of illness to presentation to the hospital was 3 days. Poor feeding and loss of appetite accounted for 76.7% of the admissions. Symptoms of vomiting were present in 37.2% of the cases. Oral ulcers were found in 96.1%, rashes over hands in 87.6%, over feet in 86.8% and over buttocks in 54.3%. Only 4.7% exhibited no rashes other than oral ulcers and were labelled as herpangina. The median duration of fever was 3 days, ranging from 2 to 7 days. An intravenous drip was required in 68.2% due to poor feeding. Viral cultures were sent in 89.1% of patients of whom 61.7% of patients were positive for viruses. Of the positive cultures, types of viruses isolated were EV71 (enterovirus 71) in 59/71 (83%), Coxsackievirus (A16, A24, A2 B3, B4) in 6/71 (8.4%), EV Untypable in 4/71 (5.6%) and mixed [EV71, echo25, cytomegalovirus (CMV)] in 2/71 (2.8%). EV71 was isolated mostly from stool samples followed by vesicle fluid culture and throat swabs. Two siblings aged 14 months and 2.5 years died during this period at day 5 of illness, their post-mortem examinations showed interstitial pneumonitis of the lungs. EV71 was isolated from the brain, heart, tonsils, intestines, throat and rectal swabs. A raised total white cell count of 14,000/L versus 12,000/L was significantly associated with complicated HFMD (P = 0.04). There was no difference in clinical characteristics of EV71 versus non-EV71 infections. Other viral illnesses, e.g. measles and CMV, may be mistaken for HFMD in the outbreak setting. Conclusions: HFMD tends to occur in younger children less than 5 years old due to low herd immunity. Poor feeding due to mouth ulcers accounts for admission to hospital requiring intravenous drip. EV71 accounted for the majority (75%) of the positive isolations, followed by coxsackievirus and untypable EV, mixed infection of echovirus or CMV. The yield of virus isolation was highest from stool, followed by vesicles and throat swabs. There is no difference in clinical characteristics of EV71 and non-EV71 virus infections. Enterovirus can cause mild symptoms to fatal death. Two infants died of interstitial pneumonitis and encephalitis.

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