

## 46.025

**A Virological Study of Enterovirus Infections in Peninsular Malaysia**

L. Samuel<sup>1,\*</sup>, T.S. Saraswathy<sup>1</sup>, S. Zainah<sup>1</sup>, Y. Mohd Apandi<sup>1</sup>, M.K. Fauziah<sup>1</sup>, A.R. Tengku Rogayah<sup>1</sup>, R. Fazilah<sup>1</sup>, A. Maizatul<sup>1</sup>, K. Nor Shahidah<sup>2</sup>

<sup>1</sup> *Institute for Medical Research, Jalan Pahang, 50588 Kuala Lumpur, Kuala Lumpur, Malaysia*

<sup>2</sup> *National Institute for Natural Products, Vaccines and Biological, C/o Institute for Medical Research, Jalan Pahang, 50588 Kuala Lumpur, Kuala Lumpur, Malaysia*

**Background:** Hand, foot, and mouth disease (HFMD) is a common illness in infants and children. It can be caused by many different human enteroviruses. Of these human enteroviruses, human enterovirus 71 (EV71) infection is more frequently associated with serious neurological complications and fatalities. The emergence of this virus emphasized the need for surveillance study and identification of EV71 to provide early warning of potential EV71 encephalitis outbreaks and assist in directing public health interventions as well as inform clinical decisions. This surveillance study was aimed to examine the prevalence of enteroviruses and EV71 in suspected clinical specimens.

**Methods:** Samples preparation: Specimens with the clinical and epidemiological data were received from various hospitals in West Malaysia from January to December 2007. The samples were analyzed immediately upon arrival in our laboratory otherwise stored at  $-80^{\circ}\text{C}$ . RNA extraction: The RNA from the specimens were extracted using High Pure Viral Nucleic Acid Kit. PCR analysis and primer sequences: One step RT-PCR was employed with primers EVPCR1 (5'-ACA-CGG-ACA-CCC-AAA-GTA-GTC-GGT-TCC-3') and EVPCR2 (5'-TCC-GGC-CCC-TGA-ATG-CGG-CTA-ATC-C-3') for enteroviruses and MAS01S (5'-ATA-ATA-GCA-YTR-GCG-GCA-GCC-CA-3') and MAS02A (5'-AGA-GGG-AGR-TCT-ATC-TCY-CC-3') for EV 71.

**Results:** A total number of 2,381 clinical specimens were analyzed for the presence of enteroviruses and EV71 by RT-PCR analysis. Out of all of the specimens analyzed, 531 (22.3%) were positive for enteroviruses and 21 (0.04%) of these were positive for EV71. These results showed that EV71 is less prevalent than other enteroviruses in the clinical specimens analyzed.

**Conclusion:** The outcomes of the present surveillance study suggested that the EV71 which is more frequently associated with serious neurological and complications and fatalities is less prevalent than other enteroviruses. The results obtained also confirmed the usefulness of the PCR as a simple and rapid method for the detection of enteroviruses and discrimination of EV71 from other enteroviruses in clinical specimens.

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## 46.026

**Neurologic Manifestation of Influenza Virus Infection in Taiwan, 2002–2007**

S.H. Wei<sup>1,\*</sup>, L.Y. Chang<sup>2</sup>, A.S. Huang<sup>1</sup>, T.F. Lee<sup>1</sup>, C.W. Chang<sup>1</sup>

<sup>1</sup> *Centers for Disease Control, Taipei, Taiwan*

<sup>2</sup> *National Taiwan University Hospital, Taipei, Taiwan*

**Background:** Neurological manifestation of influenza infection is often associated with serious sequelae or death. Severe influenza infection has been a notifiable disease in Taiwan since 2002. The incidence and clinical presentation of neurological involvement associated with influenza infection in Taiwan was reviewed.

**Methods:** During January 1, 2002 to December 31, 2007, medical records of all confirmed severe influenza infection cases were collected and reviewed. The demographics, clinical characteristics, laboratory results, and imaging studies of those with neurological manifestation were analyzed.

**Results:** A total of 123 cases of severe influenza infection cases were reported and confirmed. Of these, 25 (11%) cases presented with neurological manifestation. The mean age was 6.15 years (range 1.6–12.7 years). The average annual incidences were 0.1 per 100,000 person-years for children aged < 15 years. Thirteen patients presented with drowsiness and lethargy; 5 with abnormal behavior; 5 with seizure; 3 had perceptual abnormality including hallucination; and 2 presented with motor deficit. Overall, 10 cases were caused by influenza A and 13 by influenza B. No one had pleocytosis in cerebrospinal fluid (CSF) examination. Of the 9 persons who had brain image studies, three showed brain edema and one showed uncal herniation. Nine (36%) patients died. Among the 16 survivors, one was diagnosed with attention deficit hyperactivity disorder three years after influenza infection, another one have persistent left arm weakness, and was diagnosed with Asperger syndrome one year later.

**Conclusion:** Neurological manifestation was a rare complication of influenza infection in Taiwan, and occurred exclusively in children. The clinical presentation of influenza-associated neurological manifestation is diverse, from mild perceptual abnormality to lethal illness. Continued surveillance of neurological manifestation of influenza infection is essential.

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## 46.027

**Surveillance of Influenza B Virus Strains Circulating in Malaysia (2002–2006)**

T.R.T. Rashid<sup>1,\*</sup>, Z. Saat<sup>2</sup>, M.A. Yusof<sup>2</sup>, S.J. Berendam<sup>2</sup>, F. Md. Kassim<sup>2</sup>, K.A. Othman<sup>2</sup>, S.K. Lau<sup>2</sup>, N.S. Khairullah<sup>2</sup>, S. Lihan<sup>1</sup>

<sup>1</sup> *Virology Unit, Institute for Medical Research, Kuala Lumpur, Malaysia*

<sup>2</sup> *Institute for Medical Research, Kuala Lumpur, Malaysia*

**Background:** The Virology Unit, Institute for Medical Research (IMR), Kuala Lumpur has been designated as the National Influenza Centre since 1968, carrying out influenza surveillance activities for the Ministry of Health Malaysia.

These activities are important for preparation of epidemics and pandemics. In the past decade, several outbreaks of influenza B have been reported in this country. Thus, the aims of this study are to evaluate the incidence and to identify the circulating viral strain of influenza type B in Malaysia.

**Methods:** All respiratory specimens received from several sentinel sites from patients presenting with influenza-like illness (ILI) were included in this study. The virus was detected by culture method using Madin Darby Canine Kidney (MDCK) cells with combination of Immunofluorescence (IF) and haemagglutination inhibition (HAI) techniques.

**Results:** From 2002 to 2006 the National Influenza Centre, IMR received a total of 5,463 specimens from patients presenting with ILI. Of these, 220 (4.0%) were found to be positive for Influenza B virus and further analysis showed that there were four major strains circulating in Malaysia during the five years study period. The predominant strain in 2002 was B/Hong Kong/330/2001-like virus, B/Sichuan/379/99-like virus in 2003, B/Shanghai/361/2002-like virus in 2004, B/Hong Kong/330/2001-like virus in 2005 and B/Malaysia/2506/2004-like virus in 2006.

**Conclusion:** The surveillance activities are not only important as an early warning for outbreak preparedness but also important in detecting new strains that can be used in the annual vaccine formulation.

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46.028

#### Polyoma Viruses May Cause Chronic Cystitis and Respond to Intravesical Cidofovir

D.P. Eisen\*, L. Sung, M. Finlay, S. Bowden, H.E. O'Connell

Royal Melbourne Hospital, Melbourne, Australia

**Background:** Chronic cystitis is present in a subset of patients with the painful bladder syndrome. The role of reactivation of latent infection with polyoma viruses in causation of chronic cystitis in non-immunocompromised hosts is not described to date. The polyoma viruses, BK and JC, are ubiquitous urinary tract colonisers in early life but they rarely cause disease in non-immunocompromised subjects.

**Methods:** We have performed a retrospective case series of patients with painful bladder syndrome who have had urinary cytology for BK/JC viruses.

**Results:** Two of eighty-one painful bladder syndrome patients had biopsy evidence of chronic cystitis and repeatedly positive urinary BK/JC cytology. Immunostaining of bladder histology was negative for polyoma viruses. Bladder BK/JC PCR was also negative but this test has been optimised for urine/serum not tissue PCR. Both patients were treated with ciprofloxacin with no improvement in urinary symptoms. One patient with severe symptoms of strangury, urgency and frequent nocturia had high urinary BK viral load ( $4.7 \times 10^7$  copies/ml). This patient was treated with leflunomide as per a renal transplant BK nephropathy protocol again without improvement. Intravesical cidofovir 375 mg was instilled intravesically each week for three weeks. This produced a substantial, prolonged improvement in urinary

symptoms and a  $10^5$  log drop in urinary BK virus load. The other patient had urinary BK viral loads that fluctuated between  $5 \times 10^3$  and 0 copies/ml, milder urinary symptoms and was not treated further.

**Conclusion:** Chronic polyoma virus urinary tract infection may contribute to the causation of symptoms in a small number of patients with painful bladder syndrome. Furthermore, it appears that local therapy with intravesical cidofovir may dramatically reduce BK virus excretion and improve urinary symptoms.

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46.029

#### Prevalence of Respiratory Viruses in Acute Respiratory Infections in Korea, 2007

H.M. Cheong\*, J.H. Park, M.H. Kwon, H. Jung, K.S. Kim, C. Kang

Korea Center for Disease Control and Prevention, Seoul, Republic of Korea

**Background:** Acute respiratory infections (ARI) are among the most common infectious diseases of humans worldwide, causing significant morbidity, mortality and consequently an enormous economic burden on society. It is known that acute upper respiratory tract infections (URTI) are most likely viral. This study was performed to evaluate the associations of variable respiratory viruses with ARI, mainly URTI, in Korea.

**Methods:** To determine the prevalence of 13 viruses including adenovirus (ADV), parainfluenza viruses (PIV) 1, 2 and 3, respiratory syncytial virus (RSV) and influenza-virus (IFV) A (H1N1), A (H3N2), and B, human coronaviruses (hCoV) 229E and OC43, human rhinovirus (hRV), enterovirus (hEV), and human bocavirus (hBoV) among outpatients with ARI, we performed multiplex PCR or RT-PCR on nasal aspirates obtained from 3,648 patients who had been visited to peripheral or primary hospitals in 2007. Statistical analysis of epidemiological characteristics encompassing seasonality, age distribution and clinical features of the diseases were also performed.

**Results:** Viruses were detected in 1,054 (28.9%) of the 3,648 patients and the detection rate of each virus was ranged from 23.5% (hRV) to 0.4% (hEV), respectively. Coinfections with two or more viruses were observed in 259 patients (7.1%). Detection rates of each virus were differed by age groups. Majority of RSV were detected from < 1 year old age group. Similarly, ADV infection was peaked in 1–5 yr. The number of RSV, IFV, and hCoVs infections peaked during winter season, and PIVs, ADV and hEV also showed seasonality from spring to summer. When we analyzed the association of viral infection with clinical feature, RSV infection was statistically correlated with wheezing, and IFV A (H3N2) and B was related to systemic symptoms such as fever, chill and pain.

**Conclusions:** Even though wide spectrum of symptoms in target group of patients, our data suggests that there was a meaningful relationship between viral infection and typical manifestation of known clinical feature as well as seasonality and age distribution. Acknowledgement: We thank the physicians in peripheral or primary hospitals and the