

Virology (Non-HIV), Including New Agents, Resistance and Mechanisms of Action (Poster Presentation)

46.001

Influenza Polymerase Subunits Compatibility Between Human H1 and H5 Viruses

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Influenza A virus belongs to the Orthomyxoviridae family and remains to be medically important throughout centuries. Recent emergency of avian H5 influenza in Southeast Asia highlights the unpredictability of this pathogen. In particular, these incidences have raised serious concerns on the possibility of the emergence of a new pandemic strains to humans. In last two pandemics, beyond acquiring the glycoproteins as designated, the pandemic strains - H2N2 in 1957 and H3N2 in 1968 possessed also a polymerase subunit from their avian counterparts. Whereas the properties of the viral trimeric polymerase complex formed by polymerase basic 2 (PB2), polymerase basic 1 (PB1), and polymerase acid (PA) were suggested to play part in adaptation and virulence of H5N1 in mammalian species (Gabriel et al., 2005, Hatta et al., 2001, Salomon et al., 2006). Better understandings on the compatibility between influenza polymerase subunits from different stains would therefore be extremely important for influenza pandemic preparedness. Recombinant viruses with single polymerase genes swapped up between H1 and a H5 strain were generated by a plasmid-based reverse genetics system (Hoffmann et al., 2002). All studied polymerase recombinants were viable however with a diverse phenotype and growth kinetics. The luciferase-reporter based polymerase transcriptional activity analyses and primer extension studies revealed that polymerase constellations associated with their functions. Furthermore, investigation on the virulence of these mutants in small animal is currently undergoing. Results from this study revealed that the compatibility between avian and human viral polymerase subunits could be complex. This studied model might allow elucidating the prerequisites for the reassortment of polymerase genes from different strains. Further efforts will be made to identify the cause of this alternated function, which might help to identify the requirements for an avian influenza polymerase in achieving an effective function in mammalian species, which may help to predict the possibility of an avian H5N1 viral polymerase to fully adapt in humans.

doi:10.1016/j.ijid.2008.05.782

46.002

A Pregnant Woman with Influenza A Encephalopathy in Whom Influenza A/Hong Kong Virus (H3) Was Isolated from Cerebrospinal Fluid: Case Report

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Background: Influenza A encephalopathy is rare in adults. We report a case of a pregnant woman with influenza A encephalopathy in whom the influenza A/Hong Kong virus (H3) was isolated from cerebrospinal fluid (CSF). Report of a case: A 32-year-old pregnant woman presented with influenza symptoms (elevated temperature of 102.2 °F and a stiff neck) at 9 week's gestation on the first day. The patient gradually developed a stiff neck and continued high fever for 5 days. On admission to our hospital on the 5th day, the patient was fully conscious, but extremely restless. CSF was clear and colorless with a normal cell count and normal protein and glucose levels. Influenza A/Hong Kong virus (H3) was isolated from the CSF on the 5th day. The serum influenza A virus (H3N2) hemagglutination inhibition (HI) titer was remarkably elevated (HI=4 on the 5th day; HI=128 on the 18th day). No abnormal finding was revealed on magnetic resonance imaging of the brain. Electroencephalography showed no abnormal wave. On the 14th day, the patient's level of consciousness deteriorated to a score of 3 on the Glasgow Coma Scale. On the 17th day, she underwent an abortion at 12 weeks' gestation. On the 32nd day, she had a secondary generalized focal motor seizure in the right hand. On the 63rd day, the patient's level of consciousness improved to a score of 6 on the Glasgow Coma Scale, but did not improve further. It was not possible to wean her from the respirator because her spontaneous respiration was very weak. The patient's general condition was a persistent vegetative state, and she remained unresponsive and speechless.

Conclusion: Influenza encephalopathy occurs in the acute phase of influenza syndrome, and it is extremely rare for the viruses to be isolated from the CSF of an adult. In this case, the serum influenza A virus (H3N2) HI titer was remarkably elevated, and the influenza A/Hong Kong virus (H3) was isolated from the CSF.

doi:10.1016/j.ijid.2008.05.783

46.003

Role of the Cytokines and Chemokines in the Regulation of Innate Immunity in Dengue Virus Infection

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Background: In contrast to other countries, characterized by the co-circulation of several serotypes, Cuba represents an special scenario, with a unique history of Dengue virus epidemics, to perform studies that help to clarify the role