

found to be G2P [6] with 19.4% (20/103) frequency of occurrence. A single GNTP [8 + 6] mixed combination of rotavirus strains was also detected during the study. Strains such as G6, G9 and G12 were also detected at very low levels.

**Conclusion:** Rotavirus was found to be an important cause of diarrhoea in children 0-5 years of age in Kano, North-Western Nigeria. Further characterization of RV strains circulating in the study area is also needed to provide information needed for implementation of RV vaccination and vaccine effectiveness studies. Rotavirus vaccination should be considered as part of routine immunization in Nigeria.

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#### Divergence of chikungunya virus in India: Tale of two cities



S. Sunil<sup>1,\*</sup>, N. Vaidya<sup>2</sup>, J. Jain<sup>1</sup>, J. Shrinet<sup>1</sup>, J. Shastri<sup>2</sup>, V. Londhey<sup>2</sup>, M. Deb<sup>3</sup>, B. Gupta<sup>4</sup>

<sup>1</sup> International Centre for Genetic Engineering and Biotechnology, New Delhi, India

<sup>2</sup> Nair Hospital, Mumbai, India

<sup>3</sup> Vardhman Mahavir Medical College & Safdarjung Hospital, New Delhi, India

<sup>4</sup> Safdarjung Hospital, New delhi, India

**Background:** Chikungunya (CHIK) is a serious health issue in India and exists as single or co-infections along with Dengue (DENV). Initially restricted to the Southern parts of the country, CHIK has spread to most of the country with 18 states/Union Territories of the 26 states/UTs affected currently. The present study was conducted to understand the divergence of CHIKV from two parts of the country - Mumbai, where the virus was in circulation since a long time, and from Delhi, where the virus was witnessed since 2009. Clinical and genetic information of patients were compared to comprehend the divergence and evolution of the virus within the country.

**Methods & Materials:** Blood samples were collected over a period of three years (2010–2012) from patients after obtaining their consent and clinical information. Clinical correlation was performed within the two states. Dengue status was analysed with respect to clinical manifestation of symptoms. RNA was extracted from sera and partial gene of E1 envelope protein was amplified. The PCR products were purified, sequenced and phylogenetic analyses performed on the sequences.

**Results:** A total of 459 samples were collected over the period of three years from the two states. Serosurveillance showed 68% of patients to be positive for CHIKV IgM. Patients showed distinct differences in restriction of joint movements in case of CHIK only and CHIK/DENV co-infections. Platelet was another important feature to distinguish between CHIK and CHIK/DENV co-infection. Genetic characterisation of the samples revealed that all Indian samples were of ECSA genotype and showing K211E mutation as reported

earlier showing the expansion and establishment of this sub-clade since 2010. Further, several mutations were seen in selected samples which resulted in amino acid changes in the protein.

**Conclusion:** This study has thrown insights to the trend of Chikungunya spread in India. Whole genome sequencing of the isolates from the two states will provide important information with respect to the virulence of the virus over the years.

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#### Identification of surface glycoprotein as novel attachment factor for EV71 early infection by glycoproteomic approaches



P.Y. Su\*, C.F. Chang

Institute of Basic Medical Sciences, Tanan, Taiwan, R.O.C

**Background:** Enterovirus 71 (EV71) is a positive-stranded RNA virus, belong to genus *Enterovirus* within the family *Picornaviridae*. It is one of the common causative agent of hand-foot-and-mouth disease (HFMD) and causes severe neurologic diseases such as central nervous system (CNS) injury in infants. Although two EV71 receptors SCARB2 and PSGL-1 and several cell surface molecules have been indicated facilitate the process of virus attachment during the past few years, the mechanisms of EV71 early infection remain unclear. Therefore, to discover the new factors which mediated the recognition or entry of EV71 should be an important issue for evaluating the mechanisms of EV71 infection. Our previous report demonstrated that sialylated surface proteins influence the binding of EV71 to host cells. In this study, we applied the glycoproteomic approaches to identify EV71-associated glycoproteins that may involve in the early phase of EV71 infection. We also evaluated and verified the functions of candidate protein in EV71 virus attachment.

**Methods & Materials:** Sialylated glycoproteins were purified by Glycan chromatography from the cell membrane extraction of RD cells. The isolated glycoproteins were precipitated with EV71 viral particles, and identification by LC MS/MS analysis. The functions of candidate protein were evaluated by virus binding assay and infection assay.

**Results:** According to our results, we suggest that the candidate protein participates in EV71 virus attachment. EV71 binding and virus entry markedly reduced after si-RNA silencing. According to our results, we suggest this candidate protein was a potential receptor for EV71 infection.

**Conclusion:** We successfully apply new glycoproteomic methodology to identify the EV71-associated glycoproteins and indicated the candidate glycoprotein which facilitate the early phase of virus infection. Our finding also contribute to understanding the mechanisms of EV71 early infection and the therapeutic drug development.

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