the 4 developmental stages in *Ae. Albopictus*, indicating their potential roles in the development.

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**OL-033** The associated factors of dengue hemorrhagic fever among pediatric secondary dengue infections

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**Objectives:** The existence of dengue fever (DF) in Malaysia was first described following an outbreak in 1902 and the first case of dengue hemorrhagic fever (DHF) was reported in 1962. An annual incidence is about 4 to 7,000 cases. DHF is a common phenomenon in both adults and children. The aim of the study was to describe the associated factors of DHF in pediatric patients.

**Methods:** We reviewed all pediatric cases of laboratory confirmed secondary dengue infections from January 2005 to December 2006. The cases were selected based on serological test on the presence of dengue specific IgG and the age less than 16 year old. The data collection was made with regards to the patient’s demography, clinical presentation and laboratory profiles. Pearson Chi-square, Fisher’s exact, independent t-test and Mann-Whitney’s test were used accordingly to study the association.

**Results:** Thirty-eight cases of pediatric secondary DF were identified during study period. Seven (18.4%) DHF I and two (5.3%) DHF II cases were identified according to WHO classification. The mean age was 12.4 ± 3.7 year-old, 55.3% male, 94.7% Malay, 7.9% imported cases, 50.0% have history of contact with dengue patients and the mean fever days before admission was 5.0 ± 1.6 days. DHF was associated with hepatomegaly (p < 0.040), ascites or pleural effusion (p = 0.012), longer hospital stay (p = 0.012), lower platelet during admission (p = 0.001) and higher alkaline phosphatase (0.015). There was no significant association between DHF with any presenting symptoms. No patient needs intensive care management. There was also no significant difference in term of outcome of infection between DF and DHF. No patient died in this series.

**Conclusion:** With this limited number of patients, pediatric DHF is significantly associated with hepatomegaly and elevated liver enzyme suggesting hepatitis may play important role in the pathogenesis of DHF.

**OL-034** Association between La Niña and dengue fever cases in Lahore from 2005 to 2008

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**Objective:** To determine the association of macroclimatic and microclimatic variations and dengue fever cases admitted in various hospitals of Lahore.

**Methods:** Record of confirmed dengue fever cases admitted in various hospitals in Lahore was collected. Microclimatic data was obtained from Regional Meteorological Centre, Lahore which included rainfall (mm/month), humidity (% at 8 am and 5 pm) and temperature (°C). Macroclimatic data including SOI, ONI and El Niño/La Niña updates were obtained from World Meteorological Organization and National Oceanic & Atmospheric Administration, USA.

**Results:** There were a total of 1757 indigenously confirmed cases of dengue fever in Lahore from 2005 to 2008. Linear regression models found statistically significant correlation between SOI and minimum temperature (r = -0.76, p < 0.05) as well as maximum temperature (r = -0.678, p < 0.05) but no correlation between SOI and rainfall in Lahore (r = -0.029, p > 0.05). However, there was positive correlation between daily rainfall and ONI (r = -0.946, p < 0.05). highest number of dengue fever cases were recorded in 2008 which had a positive correlation with La Niña (90% higher than the mean number of cases) when compared with years having weak or no La Niña in which case there was a reduction in number of cases compared to mean value (p < 0.001).

**Conclusion:** A positive correlation was found between SOI and dengue (r = 0.781, p < 0.05). Dengue fever cases in Lahore were positively correlated with minimum temperature (r = -0.967, F = 61.84, p < 0.05), maximum temperature (r = 0.981, F = 52.1, p < 0.05) and rainfall (r = 0.543, p < 0.05). No significant correlation was found between relative humidity and dengue fever cases (p > 0.05).

**OL-035** Does absence of itch-response to mosquito bite enhance susceptibility to the chikungunya virus infection?

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**Background:** Itch response to mosquito bite is an immune response against foreign proteins injected with mosquito bite. We observed a substantially large segment of chikungunya patients reporting for the lack of itch response to mosquito bite. Hence we studied the recent chikungunya epidemic (2006–2009) to explore the possible relation if any between the absence of itch response and an individual’s susceptibility to chikungunya.

**Method:** We retrospectively studied the itch sensitivity patterns in 3000 subjects confirmed serologically for the chikungunya virus infection. The findings were compared with another set of 3000 subjects matched for age and sex, belonging to the same socioeconomic class and residing in the same areas presenting with other diseases with no current or past history of chikungunya virus infection as per the National Institute of Communicable diseases (NICD), India case definition. Data analysis was conducted using software GraphPad instat.

**Results:** The Odds of acquiring the chikungunya infection in patients without the histology of itch response to mosquito bites is much higher compared (OR: 4.880, 95%CI: 4.373–5.444) to those with strong history of itch response demonstrated by itching and wheal reaction. Among the subjects diagnosed clinically for chikungunya it was also observed that the disease symptoms like joint pain (OR: 5.406, CI: 4.319–6.767), retro orbital pain (OR: 2.299, CI: 1.936–2.730), were more pronounced (p < 0.0001) in those with absence of itch response compared to those with positive history of itch response. Symptom of myalgia