SIgN Immunology Seminar

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Alphavirus pathogenesis in non-human primates highlights the role of viral persistence in tissues to arthrogenic disease

Host
Dr Lisa Ng
Singapore Immunology Network, A*Star

Date
Friday,
7 September 2012

Time
11am – 12pm

Venue
SIgN
Seminar Room,
Immunos Building
Level 4
Biopolis

The re-emergence of Chikungunya virus (CHIKV) worldwide has increased the interest in alphaviruses that induced rheumatic disease and the need to develop vaccines and better treatments. However, the mechanism for long-term disease progression is still poorly understood. We have previously showed the association of CHIKV with macrophages (Labadie JCI 2010). We further investigated the pathogenesis of Ross River Virus (RRV) in the macaque model in order to identify potential key events involved in virus-induced arthrogenic disease. Clinical and biological events in experimentally RRV-infected macaques with RRV strain T48 or QML-1 will be described in parallel to data obtained with CHIKV infection. Using either intravenous or subcutaneous infection, both RRV strains induced a very mild acute phase compared with CHIKV. However, local inflammation and joint swelling are readily obtained by sub-cutaneous inoculation close to the wrist. In addition, plasma levels of IFN-type 1 and cytokine/chemokine profiles indicated a clear and strong innate response. Specific anti-RRV responses were found from day 7 onwards. Using *in situ* hybridization, RRV was detected in joint and lymphoid tissues like CHIKV. *In vitro* experiments showed that like CHIKV, RRV was able to infect and persist for weeks in monocytes-derived macrophages from macaques. Our study showed that experimental infection of macaques with RRV reproduced the mild acute symptoms and infection seen in humans. Furthermore, our data also indicated a major role for virus-infected macrophages in disseminating infection in tissues.