Dengue Virus Activates Polyreactive, Natural IgG B Cells After Primary and Secondary Infection - DTU Orbit (17/02/2019)

Dengue Virus Activates Polyreactive, Natural IgG B Cells After Primary and Secondary Infection

Background: Dengue virus is transmitted by mosquitoes and has four serotypes. Cross-protection to other serotypes lasting for a few months is observed following infection with one serotype. There is evidence that low-affinity T and/or B cells from primary infections contribute to the severe syndromes often associated with secondary dengue infections. Such pronounced immune-mediated enhancement suggests a dengue-specific pattern of immune cell activation. This study investigates the acute and early convalescent B cell response leading to the generation of cross-reactive and neutralizing antibodies following dengue infection. Methodology/Principal Findings: We assayed blood samples taken from dengue patients with primary or secondary infection during acute disease and convalescence and compared them to samples from patients presenting with non-dengue related fever. Dengue induced massive early plasmablast formation, which correlated with the appearance of polyclonal, cross-reactive IgG for both primary and secondary infection. Surprisingly, the contribution of IgG to the neutralizing titer 4–7 days after fever onset was more than 50% even after primary infection. Conclusions/Significance: Poly-reactive and virus serotype cross-reactive IgG are an important component of the innate response in humans during both primary and secondary dengue infection, and “innate specificities” seem to constitute part of the adaptive response in dengue. While of potential importance for protection during secondary infection, cross-reactive B cells will also compete with highly neutralizing B cells and possibly interfere with their development.

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