

Inflammatory mechanism during Japanese encephalitis virus infection

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Abstract

Japanese encephalitis (JE) is one of the chief causes of acute encephalitis syndrome (AES) in North India with more than 15% confirmed cases. The disease is caused by Japanese encephalitis virus (JEV), a neurovirulent RNA flavivirus transmitted by Culex mosquitoes. The virus in natural cycle circulates between pig and mosquitoes or bird and mosquitoes, with pigs being the most important biological amplifiers. Though humans are accidental dead end hosts, JE has generated considerable public anxiety because it mainly remains a disease of children. The disease ranges from non-specific febrile illness to a severe meningoencephalomyelitis illness. The transmission of disease can occur throughout the year in endemic zone, with disease at a peak during monsoon season. Since there is no specific treatment available and vaccination is the best measure to get protection from the disease; it is important to understand the molecular mechanisms in host. The virus has been shown to induce neutrophil infiltration in neural and extra neural tissues. A neutrophil chemotactic protein derived from macrophages had been isolated from JEV induced animal models. It had variety of pathologic effects on host, including vascular permeability and breach in blood brain barrier. The presence of inflammatory chemokine IL-8 was also significantly detected in JE confirmed patients during acute phase of illness. The study had revealed a correlation between IL-8 levels and severity of illness as all severely ill and fatal cases showed higher levels of IL-8 in acute cerebrospinal fluid (CSF) and serum. In cases who recovered completely, the level of IL-8 declined markedly by convalescent phase. The study indicates important interaction between pro inflammatory cytokine, macrophages and neutrophils during JE infection.

Biography:

Aditi Singh has over seventeen years of experience in research and academics. After completing her Doctorate in the year 2000 from King Georges' Medical College, she started teaching at undergraduate and post graduate level. During PhD thesis, she tried to understand the pathogenesis of Japanese encephalitis virus in disease confirmed patients; where in pro inflammatory cytokines were studied and evaluated. Her area of research interest is Microbiology, Immunology and Enzymology. Till now, she has authored more than thirty research papers in national and international journals and two book chapters. She has presented more than twenty papers in national and international conferences. Currently, she is working as Associate Professor in Amity University, a leading private University of India.

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