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Dengue immunology and diagnosis: advances & challenges

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Abstract

Dengue Fever (DF), and its more serious forms, Dengue Haemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS), are global health problems of grave concern with about 2.5 billion people at risk in 200 countries. The causative agent, Dengue - Virus (DV), a mosquito-borne flavi-virus, is the most prevalent arbovirus in tropical and subtropical regions of the world. It has 4 distinct serotypes, D1 to D4. Infection induces a life-long protective immunity to the homologous serotype but confers only partial and transient protection against subsequent infections by the other three serotypes. In fact, secondary infection with another serotype or multiple infections is a major risk factor for DHF-DSS due to antibody-dependent enhancement. Recently, human-induced environmental changes, inadequate mosquito control, urban population growth, greater air travel & climatic changes have led to spread of Dengue viruses & major epidemics of DF/DHF in India. Attempts to eradicate Aedes aegypti, the most efficient mosquito vector of dengue virus, are not successful due to lack of an effective vaccine. Whereas DF is a self-limiting, undifferentiated, febrile condition that recovers completely, DHF-DSS are associated with high rates of morbidity & mortality due to increased vascular permeability and haemorrhage that typically follows fever. Thus, diagnosis of Dengue virus infection based on clinical symptoms alone is unreliable & should be confirmed by laboratory investigations targeting rapid detection and differentiation of dengue virus infection in the acute phase of illness in order to provide timely treatment & prevent serious complications.

Biography

Sarbjeet Sharma is a Clinical Microbiologist to the work of diagnostics for over 20 years, with keen focus on HIV and Tuberculosis. She has contributed many international and national publications and presentations.

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