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Plasma nitric oxide and salivary oxidized LDL as early predictive biomarkers of progression to dengue hemorrhagic fever

A L S Sewwandi, Harsha Hapugaswatte, Pubudu Amarasena, Ranjan Premaratne, Kapila N Seneviratne, Nimanthi Jayathilaka
University of Kelaniya, Sri Lanka

Dengue is mosquito-borne disease characterized by a mild febrile illness as dengue fever (DF) and severe stage of illness as dengue hemorrhagic fever (DHF) and dengue shock syndrome that can lead to mortality. Early clinical management is critical in preventing mortality. Virus-induced activation of phagocytes is associated with oxidative stress. Several markers of oxidative stress have been reported to differentiate between DF and DHF. This study was carried out to assess the potential of biochemical markers of oxidative stress; nitric oxide (NO) and oxidized LDL (Ox LDL) to serve as markers of disease severity during the early stages of infection. We assessed the levels of NO and Ox LDL in both plasma and saliva due to the potential of salivary biomarkers to serve as a non-invasive prognostic tool. Plasma and saliva samples collected within 4 days from fever onset were analyzed. Griess reaction was used to quantify plasma and salivary NO levels. Plasma NO concentration in the DF group (n= 36) was significantly higher than that of those who later developed DHF (n=31) (p<0.05). Although salivary NO concentration in DF (n=16) and DHF groups (n=18) also show a difference, there was a high standard deviation of data probably due to the influence of oral health and diet. Plasma and saliva Ox LDL in DF and DHF groups were analyzed using ELISA. Plasma Ox LDL concentration in DF (n= 16) was higher than that of DHF groups (n=16), while salivary Ox LDL in DF patients (n=8) was significantly higher (p<0.05) than that of DHF patients (n=8). Therefore, the plasma NO levels and salivary Ox LDL may serve as reliable biomarkers of the severity of Dengue infection during the acute phase.

Biography

Nimanthi Jayathilaka earned her Ph.D. from the University of Southern California and conducted her postdoctoral studies at the University of California, San Diego. Currently, she serves as a Senior Lecturer in Chemistry at the University of Kelaniya, Sri Lanka. Her primary research interest is transcriptional regulation in communicable and non-communicable diseases.

njayathi@kln.ac.lk

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