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Expression of cytokines in tissues and correlation with histopathological changes in dengue fatal cases from Brazil

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The pathogenesis of dengue hemorrhagic fever (DHF) is complex and not well defined. In the present work, we initiated a study with tissues obtained from different organs (liver, lung, heart and kidney) of four dengue fatal cases. The history of patients and correlation with histopathological damages and cytokine expression were the main focus of this work. All patients presented symptoms of DHF, such as headache, myalgia, anorexia, rash maculopapular, diarrhea, petechial bleeding, pulmonary congestion, edema and hemorrhage. The progression of symptoms correlated with co-morbities, especially diabetes and obesity (cases 1 and 2, respectively). The heart of case 1 showed ischemic myocarditis, confirmed by histopathological aspects, and we observed areas with diffuse edema and degeneration cardiac fibers. The expression of cytokines in the ischemic heart showed a predominance of anti-inflammatory cytokine (TGFβ). On the other hand, in case 2 we observed extensive areas with steatosis (micro and macrovesicular) and necrosis in the liver and pulmonary disorders, such as thickened alveolar septa and hypertrophy of alveolar macrophages resulting in an increase of pro-inflammatory cytokines in both organs. The kidney of case 2 also presented acute tubular necrosis, with increased number of macrophages cells, with pro and anti-inflammatory cytokines. In all organs of the four cases studied, we observed areas with tissue injuries with high expression of RANTES. The different pathological aspects in the tissues of the four dengue cases, as well as the different cytokine profiles in each organ, suggest a compartmentalization of the immune system in these organs.

Biography

Marciano Viana Paes had done his Ph.D. in Cellular and Molecular Biology in the area of Virology/Pathology of dengue. He is a researcher in public health at the Oswaldo Cruz Foundation and working with pathology of fatal cases of dengue and experimental models from past 10 years.

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