

Longitudinal evaluation of neutrophil extracellular trap (NET) markers in Chikungunya virus infection.

Panel/Poster

Interacciones patógeno-hospedero

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Neutrophil extracellular traps (NETs) are structures composed of DNA, histones, and antimicrobial proteins released by neutrophils as part of the innate immune response. Although extensively studied in bacterial infections, their role in viral diseases, such as Chikungunya virus (CHIKV) infection, remains poorly understood. In viral infections, NETs may exert a protective function but can also contribute to tissue damage when produced excessively. The lack of studies investigating NETs in Chikungunya limits our understanding of the antiviral immune response and hinders the development of effective therapeutic and diagnostic strategies. This study investigated plasma NET markers over time in female patients aged 20 to 80 years with CHIKV infection. Inclusion criteria were female patients aged 18 years or older with positive IgM/IgG serology for CHIKV. A cohort of 40 women with CHIKV infection was evaluated across five time points: baseline (D0) and follow-up days D21, D90, D180, and D360. NET markers including myeloperoxidase (MPO), neutrophil elastase (NE), citrullinated histone H3, and cell-free DNA were quantified in plasma using sandwich ELISA and fluorometry. Statistical analyses were performed using non-parametric tests and Spearman's rank correlation, with statistical significance set at $p < 0.05$. The study demonstrated statistically significant temporal changes in MPO levels, characterized by a decrease from D0 to D21, followed by an increase between D21 and D360. Neutrophil elastase levels also showed significant variations, decreasing between D0 and D21 and remaining stable between D180 and D360. No significant differences in

citrullinated histone H3 levels were observed across the analyzed periods. Cell-free DNA levels were significantly elevated at D0 compared with all subsequent time points. Furthermore, no significant differences in NET marker kinetics were found when stratifying patients by the presence of chronic pain, comorbidities, or medication use. These findings highlight the importance of understanding the balance between the protective and pathological roles of NETs, providing valuable insights for the development of targeted therapeutic interventions aimed at minimizing inflammatory damage while preserving antiviral immunity during CHIKV infection.

Palabras Clave

(1) Chikungunya, (2) Immune response, (3) neutrophils, (4) NETs, (5) Virus.

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