

## Recent publications

Following you find a brief abstract of a scientific publication concerning LEUKOCARE's technologies. Please find the full text article at the given reference.

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### **Neutrophil-derived circulating free DNA (cf-DNA/NETs): a potential prognostic marker for posttraumatic development of inflammatory second hit and sepsis.**

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The release of "neutrophil extracellular traps" (NETs) has been identified as a novel immune response in innate immunity. Neutrophil extracellular traps are composed of neutrophil-derived circulating free DNA (cf-DNA), histones, and neutrophil cytoplasm-derived proteins such as proteases. Here, we studied the putative predictive value of plasma cf-DNA/NETs for the development of sepsis and mortality after multiple trauma. In a prospective pilot study with 45 multiple trauma (Injury Severity Score >16) patients, cf-DNA was directly quantified in plasma. Blood samples were sequentially obtained daily from admission to our Trauma Center until day 10. Because of limited intensive care unit (ICU) stay of less than 3 days, 8 patients have been excluded, resulting in 37 patients that were evaluated. Time kinetics of cf-DNA/NETs was compared with C-reactive protein (CRP), interleukin (IL) 6, leukocyte counts, and myeloperoxidase. The severity of the injury was calculated on the basis of the Injury Severity Score, as well as Multiple Organ Dysfunction Score, Sequential Organ Failure Assessment, and Simplified Acute Physiology Score II on ICU. Initially high cf-DNA/NETs values (>800 ng/mL) with recurrent increased values between days 5 to 9 were associated with subsequent sepsis, multiple organ failure, and death. In conjunction with cf-DNA/NETs, IL-6 was significantly elevated after admission. However, the development of a second hit was not indicated by IL-6. In contrast to cf-DNA/NETs, no difference in CRP kinetics was observed between patients with and without development of sepsis. Circulating free DNA/NETs kinetics rather followed kinetics of Multiple Organ Dysfunction Score, Sepsis-related Organ Failure Assessment, leukocyte counts, and partially of myeloperoxidase. Circulating free DNA/NETs seems to be a valuable additional marker for the calculation of injury severity and/or prediction of inflammatory second hit on ICU. However, a large clinical trial with severely injured patients should confirm the prognostic value of neutrophil-derived cf-DNA/NETs.