Categorie: **RCT of cohortstudie**
Presentatie voorkeur: **Orale presentatie**

The functional inflammatory program of circulating neutrophils after severe traumatic injury

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Introductie

Severe traumatic injury is often accompanied by late onset infectious complications. Trauma initiates the mobilization of different neutrophil subsets. This study explores the (antibacterial) function of the circulating neutrophil population during the first two weeks after severe trauma in relation to the development of infectious complications.

Methode

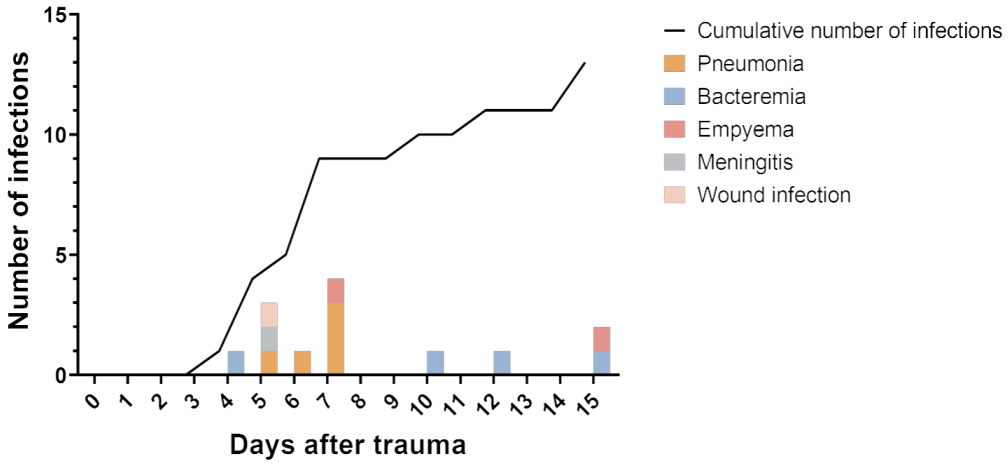
A prospective observational cohort study was designed to longitudinally sample blood from severely injured patients during the first 15 days after trauma. Blood neutrophil counts, surface marker expression, phagocytosis, phagolysosomal acidification and bacterial killing capacity were analyzed over time and compared to control values.

Resultaten

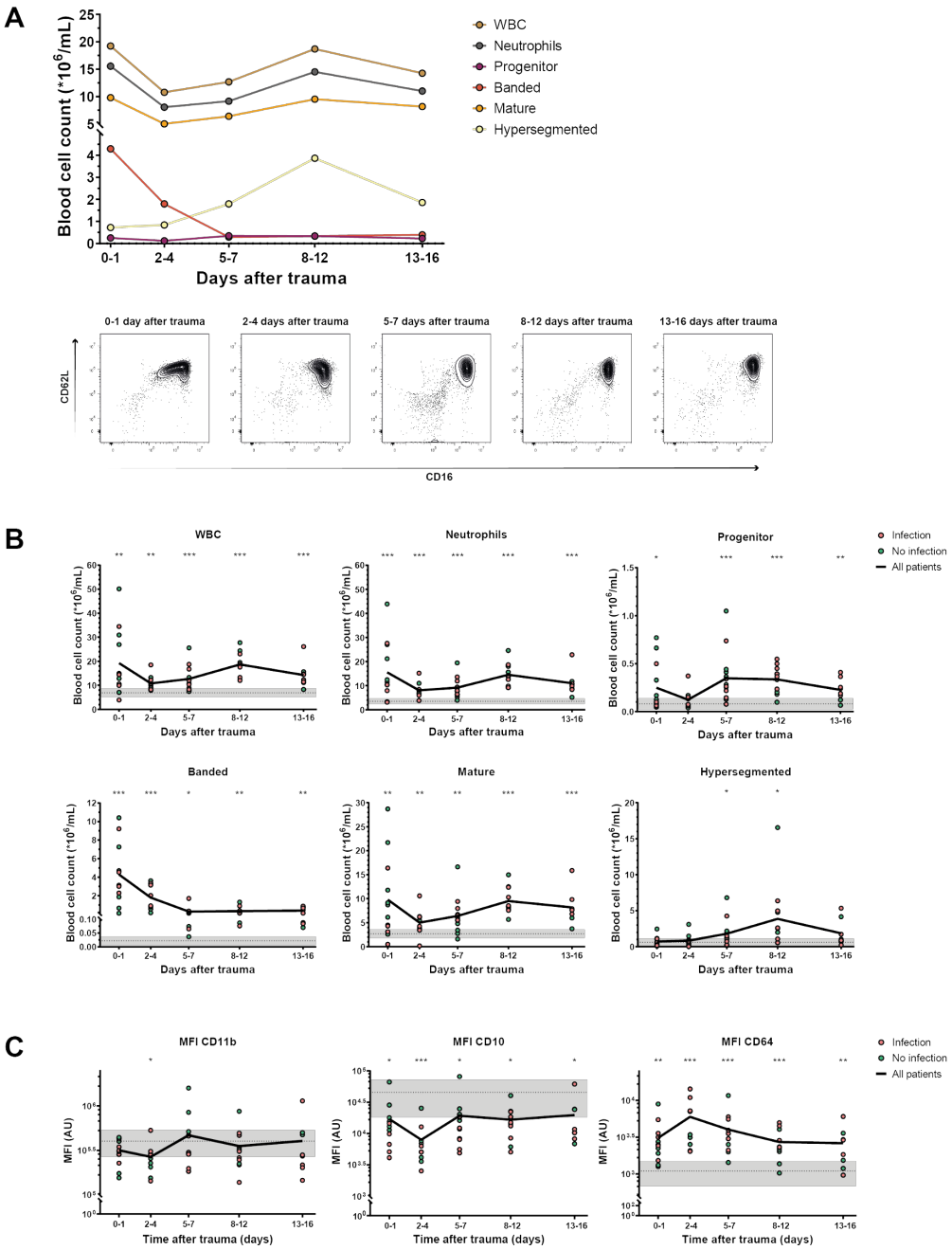
Out of 15 included male patients, 7 patients developed an infection. Banded neutrophils were seen during an initial leukocytosis, whereas progenitors and hypersegmented neutrophils were present during a second leukocytosis. The extent of phagocytosis and acidification were increased compared to controls at all time points. The infectious group showed a decreased killing capacity, already visible during the first days after trauma, whereas the non-infectious group did not.

Conclusie

This study identified changes of the neutrophil compartment post trauma. Malfunction was associated with both number and functional variety (phagocytosis, acidification and bacterial killing) of different neutrophil subsets. These findings support the hypothesis that an exaggerated innate immune response is caused by the liberation of DAMPs from the damaged tissues in trauma patients.



Number and type of infectious complications over time after severe traumatic injury.



Blood cell counts and surface marker expression over time after severe traumatic injury.