

Point-of-care blood test for early sepsis diagnosis

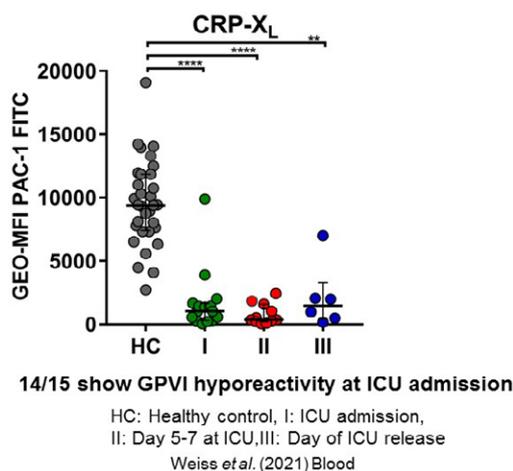
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CHALLENGE

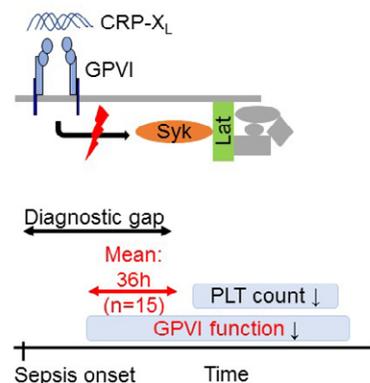
Sepsis is a life-threatening multiorgan failure caused by an excessive, dysregulated immune reaction following an infection. Comprising over 20 million annual cases and estimated 8 million cases of death worldwide, sepsis is a major contributor to the global disease burden. Early diagnosis is crucial for an immediate therapy onset and hence patients' survival. However, a precise diagnosis is still hampered by the lack of specific symptoms. The challenge is thus to develop a tool for the early diagnosis of sepsis or a developing sepsis; ideally a simple, quick point-of-care test for emergency rooms and doctor's practices.

INNOVATION

The innovation describes a novel **diagnostic tool for sepsis based on altered platelet function**. Patients' blood samples are stimulated with specific agonists, the readout can be done by e.g. **ELISA, aggregometry, or FACS**. The test can be used for all cases of suspected sepsis regardless of the focus of infection (respiratory, urogenital, abdominal), or source of infection (gram-positive, gram-negative, SARS-CoV-2, fungal) and can provide additional clinical information about disease severity and patient prognosis. The method allows medical personnel to make coherent decisions at a much earlier time point than usual sepsis diagnostic methods, e.g. about the need for an immediate start of antibiotic therapy, the transfer to an ICU or close monitoring of high-risk patients.



Sepsis patients show early GPVI dysfunction



COMMERCIAL OPPORTUNITIES

The innovation can be used for early identification of a developing or manifested sepsis. Potential applications are:

- Blood test kits for hospitals, medical practices, emergency departments
- Point-of-care test devices

DEVELOPMENT STATUS

Proof of concept. A confirmatory prospective case-control study is currently ongoing including a larger sized patient cohort (n=300) comprising patients with sepsis, septic shock or infection without sepsis. So far >50 patients with sepsis or septic shock, >20 patients with infection and >15 patients with SARS-Cov-2 have been included. Pilot data indicates robust differentiation between patients with infection without sepsis (SOFA-score < 2), and septic patients (SOFA-score ≥ 2).

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- L. J. Weiss, G. Manukjan, M. Weigel, N. Winter, M. Kredel, B. Nieswandt, D. Weismann and H. Schulze (2021). „Acquired Platelet GPVI Signaling Deficiency Occurs Early in Patients with Gram-Positive or Gram-negative Sepsis.“ *Res Pract Thromb Haemost*.