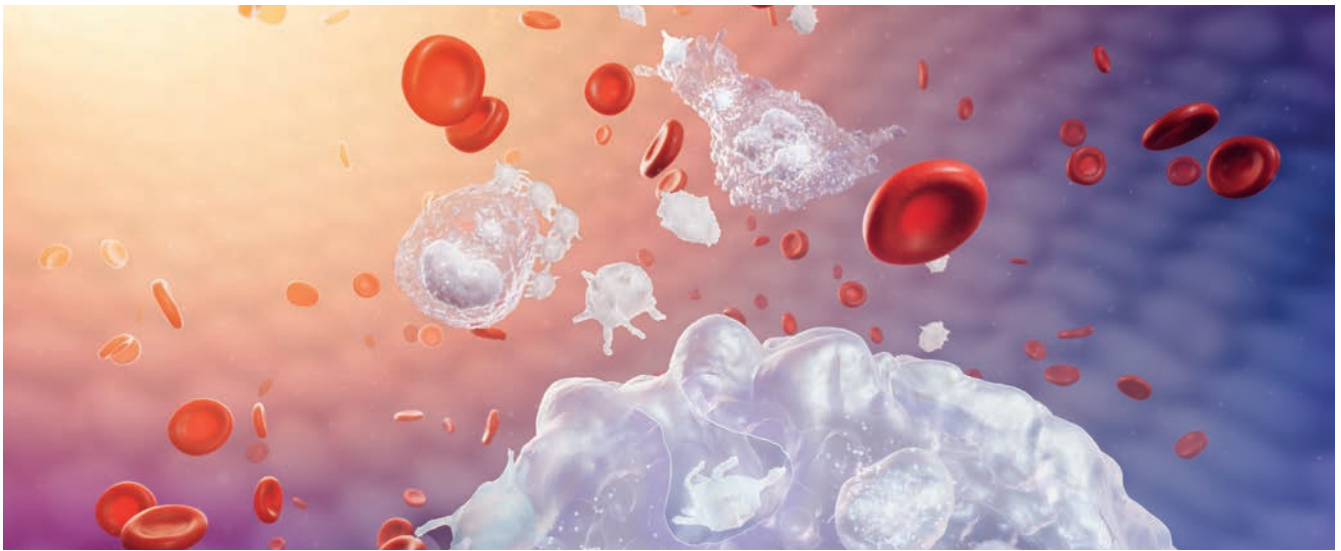


CASE REPORT

Infection

EDTA-dependent phagocytosis of platelets due to an underlying infection



Clinical information and laboratory results

A patient presented to the hospital with malaise and fever. Later, a pyelonephritis caused by *Klebsiella pneumoniae* was diagnosed.

- Upon admission the patient showed an increased neutrophil reactivity intensity (NEUT-RI) of 60.1 FI (reference intervals 42.0–50.6 FI [1]). A subsequent blood smear revealed not only strongly activated neutrophils but also platelet satellitism around neutrophils and monocytes and platelet phagocytosis.
- The follow-up measurements on the next days showed a remaining high result of NEUT-RI and neutrophil destruction, vacuolation and phagocytosis was still observed in the smear.
- Subsequently, a new sample was ordered, using citrate as anticoagulant*. This sample showed neither platelet satellitism nor phagocytosis.

* The use of citrate anticoagulant is not supported by Sysmex and the possible impact on analytical performance needs to be validated by the user.

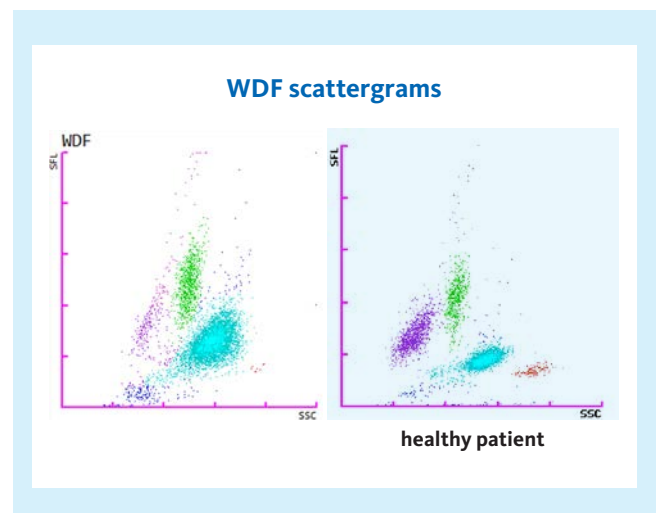


Fig. 1 The left scattergram was obtained from the patient, showing increased reactivity intensity of neutrophils (NEUT-RI), visible as increased SFL. The scattergram on the right shows an example of a healthy patient for comparison.

Result interpretation

In the early phase of the innate immune response, neutrophils are activated and provide a first, non-specific line of defence against the pathogens. During this process the neutrophils are highly activated and their granularity and metabolic activity increases [2].

On XN-Series haematology analysers, a higher reactivity of neutrophils leads to an increased fluorescence intensity (SFL) in the WDF measurement channel, while an increase in granularity leads to higher scatter intensity (SSC). With the 'Extended Inflammation Parameters' NEUT-RI (reactivity intensity of neutrophils) and NEUT-GI (granularity intensity of neutrophils) – which are diagnostic parameters – this becomes measurable.

Studies have shown that an increase in NEUT-RI can be associated with bacterial infections [3, 4].

In very rare cases, underlying conditions such as bacterial infections or oncological diseases can trigger autoantibodies against platelets [5]. These autoantibodies activate pathways leading to platelet agglutination, satellitism, and phagocytosis by neutrophils and, more rarely, monocytes [6 – 8], which can be seen on this patient's blood smear.

This process called 'EDTA-dependent pseudothrombocytopenia' is not a disease but an *in vitro* phenomenon.

In the present case, the EDTA-dependent pseudothrombocytopenia was likely triggered by the underlying *Klebsiella pneumoniae* infection.

You can find additional information on the case by visiting:
www.sysmex-europe.com/Feb23

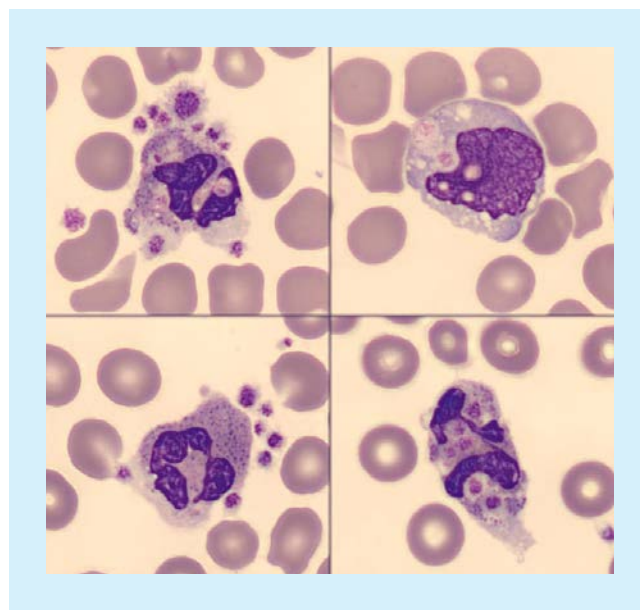


Fig. 2 Digital imaging (by a DI-60) demonstrating platelet satellitism and monocytic and neutrophilic phagocytes, as well as vacuolation.

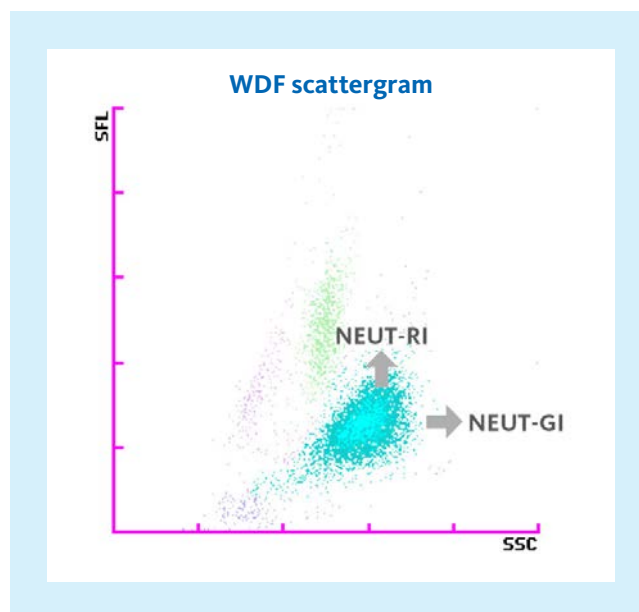


Fig. 3 The SSC signal of the neutrophil population, which is plotted on the x-axis of the scattergram, is an indication of the granularity and internal structure of the cells. Fluorescence intensity, which corresponds to RNA/DNA cell content, is plotted on the y-axis and is an indicator for increased RNA activity.

References

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