

High in-hospital mortality of intensive care patients with nucleated red blood cells in blood.

[Stachon A](#), [Holland-Letz T](#), [Krieg M](#).

Institute of Clinical Chemistry, Transfusion and Laboratory Medicine, BG-University Hospital Bergmannsheil, Ruhr-University Bochum, Germany. Axel.Stachon@ruhr-uni-bochum.de

The detection of nucleated red blood cells (NRBCs) in blood of patients suffering from a variety of severe diseases is known to be highly associated with increased mortality. Blood analyzers to routinely measure NRBC concentrations are now available. However, the diagnostic and prognostic significance of this parameter for intensive care patients has not been evaluated. Using a Sysmex XE-2100 analyzer, NRBC concentrations were determined in blood samples from 421 patients treated in intensive care units (general and accident surgery, cardiothoracic surgery, and internal medicine) of a university hospital. NRBCs were found at least once in 19.2% of all patients. The mortality of NRBC-positive patients (n=81) was 42.0% (n=34); this was significantly higher ($p < 0.001$) than the mortality of NRBC-negative patients (5.9%, n=340). The NRBC concentration was $115 \pm 4 \times 10^6/l$ (median $40 \times 10^6/l$; range $20-2930 \times 10^6/l$) at initial detection of NRBCs in the blood. Mortality increased with increasing NRBC concentration and increasing frequency of occurrence. With regard to in-hospital mortality, NRBCs in blood showed sensitivity and specificity of 63.0% and 87.2%, respectively. The detection of NRBCs is highly predictive of death, the odds ratio after adjustment for other laboratory prognostic indicators being 1.01 ($p < 0.01$) for each increase in the NRBC concentration of $+1 \times 10^6/l$. NRBCs were detected for the first time, on average, 13 days (median 8 days) before death. The routine analysis of NRBCs in blood is of high prognostic power with regard to in-hospital mortality of critically ill patients. Therefore, this parameter may serve as an early indicator for patients at increased mortality risk.

PMID: 15387445 [PubMed - indexed for MEDLINE]