

Incidence of Nucleated Red Blood Cells in the Blood of Hospitalised Patients

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Background: Nucleated red blood cells (NRBC) are usually not found in the peripheral blood of healthy adults. Their detection seems to be highly associated with an increased mortality. As a new approach, blood analysers of the latest generation allow to measure rather low NRBC concentrations. So far, the clinical significance of routinely measured NRBC concentrations by such analysers has not been evaluated.

Material and Methods: In a still ongoing study NRBC concentrations were screened in all routinely requested blood samples of a university clinic. NRBC concentrations as well as other blood parameters were measured with a Sysmex XE-2100™.

Results: So far, 2,985 blood samples obtained from a total number of 1,090 patients were analysed. 7.6% of the patients were NRBC-positive at least once. The highest incidence (23.3%) was found in patients treated in a general and accident surgery intensive care unit. A borderline correlation ($r = 0.29$) was found between the concentration of NRBC and leucocytes. There was no correlation between concentration of NRBC and the reticulocytes, but higher detection rates of NRBC were found in bloods with very low as well as with very high reticulocyte concentrations.

Conclusions: The detection of NRBC in the blood of patients treated in an intensive care unit appears to be a quite common phenomenon. The detection of NRBC in the peripheral blood seems to be an indicator either of bone marrow stimulation or of bone marrow insufficiency. However, the underlying pathophysiological mechanisms leading to NRBC in the peripheral blood under both conditions are still widely unknown. The still ongoing study could probably show whether the routine measurement of NRBC by a mechanised blood analyser may substantially contribute to identify patients at extremely high risk