

Nucleated red blood cells in term fetuses: reference values using an automated analyzer

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BACKGROUND: Nucleated red blood cells (NRBCs) are present in small numbers in the cord blood of healthy fetuses at birth. Acute and chronic stimuli, such as fetal hypoxia, cause increased circulating levels of NRBCs. Manual counting is presently the only way to quantify NRBCs, but it is time-consuming and inaccurate. Recently, automated approaches have been developed in order to quantify NRBCs. **OBJECTIVES:** Our aim was to compare manual vs. automated NRBC counting and derive reference values in umbilical cord blood samples from healthy term fetuses. **METHODS:** We analyzed blood samples from 131 healthy term fetuses by the automated approach and calculated reference values of NRBC counts as percentiles. To compare automated NRBC count with manual count we obtained umbilical cord blood samples from 50 further fetuses. **RESULTS:** Significant positive correlation was obtained between the two methods ($r(2) = 0.988$, Bland-Altman plot mean difference NRBCs/100 WBC: -0.590). The median for NRBCs/100 WBC was 3.05 (range 0-11.6) and the median for absolute NRBC counts $\times 10^9/l$ was 0.39 (range 0-1.8). **CONCLUSIONS:** We demonstrate that values obtained with the automated NRBC counting method are comparable to those obtained with the microscopic manual evaluation and give reference values for umbilical cord NRBCs at term that can be used in clinical practice. Copyright (c) 2007 S. Karger AG, Basel.

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