

Cytometry B Clin Cytom. 2004 Mar;58(1):25-31

Automation of bone marrow aspirate examination using the XE-2100 automated hematology analyzer

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BACKGROUND: Attempts to analyze bone marrow aspirates have been reported with the use of several automated blood cell counters, but sufficient accuracy in examination is not acquired yet. Major problems have included difficulties in correctly differentiating various immature cells and interference by lipid in bone marrow aspirates. The goal of this study was to solve these problems to attain more accurate assessment of bone marrow aspirates with automated blood cell counters. **METHODS:** We modified the XE-2100 Automated Hematology Analyzer (Sysmex Corporation, Kobe, Japan) to fit it for bone marrow aspirate measurement and evaluated its performance. Measurements were performed with the modified XE-2100 on 81 patient samples of bone marrow aspirates; as a reference, the manual visual method was used and flow cytometric analysis were carried out. **RESULTS:** Good correlations between results with the modified XE-2100 and the manual visual method were obtained for total nucleated cell count (TNCC; $r = 0.99$), erythroblast/TNCC ratio ($r = 0.93$), and myeloid cell/TNCC ratio ($r = 0.75$). **CONCLUSIONS:** When this device is used, bone marrow aspirate differentials can be determined quickly and easily. This device will be useful for preliminary examination to obtain a summary of various blood cell ratios in bone marrow aspirates before performance of microscopic examination. Copyright 2004 Wiley-Liss, Inc.

PMID: 14994372 [PubMed - indexed for MEDLINE]