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Automated counting of white blood cells in synovial fluid

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OBJECTIVES: To evaluate the performance of automated leucocyte (white blood cell; WBC) counting by comparison with manual counting. METHODS: The number of WBC was determined in heparinized synovial fluid samples by the use of (i) a standard urine cytometer (Kova) and a microscope (reference method) and (ii) a haematology analyser (Sysmex XE-2100; WBC/BASO and DIFF channels). Imprecision within and between days was determined by replicate analysis of a low (level A; WBC approximately 0.560 x 10(9)/l) and a high (level B; WBC approximately 1.081 x 10(9)/l) dedicated synovial fluid control (Quantimetrix). RESULTS: The WBC count of the DIFF channel was highly correlated with the WBC count of the microscopic reference method (r = 0.99; WBC analyser = 0.870 x WBC reference method + 0.413). In contrast, no agreement existed between WBC counts generated by the WBC/BASO channel of the analyser and the reference method (r = 0.52; WBC analyser = 0.008 x WBC reference method + 0.079). Within-day imprecision (4-7%) and between-day imprecision (10%) of the haematology analyser were smaller than the within-day imprecision (12%) and the between-day imprecision (20-22%) of the manual reference method. For manual counting, inter-observer coefficients of variation were 35.9% (control level A) and 21.0% (control level B). CONCLUSIONS: The WBC count in synovial fluid can be reliably determined using the DIFF channel of the Sysmex XE-2100. Automated counting of WBC in synovial fluid offers more precise and faster results than manual counting.

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