Automation of Semen Analysis Using Flow Cytometer in Comparison with Manual Methods

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Abstract

In order to standardize techniques and limit the effect of human factors on the results of analyses of biological fluids, automation seems to be mandatory. In an attempt to automate semen analysis, computer assisted sperm analysis (CASA) system has been developed, however its use is still limited and its practical applications have many criticisms. In a trial to automate semen analysis, this study aimed to evaluate the usefulness of flow cytometer in the detection of some seminal parameters in comparison with the traditional manual methods. Isolated spermatogenic cells and isolated sperms from semen and EDTA blood of volunteers were analyzed by flow cytometer in order to define their respective regions. Ejaculates of 28 male patients were subjected to routine semen analyses, leucocytes detection by peroxidase test and monoclonal antibody CD53 using flow cytometer after preparation of the patients' semen samples for flow cytometeric analysis. A highly significant correlation (r=0.96, p= 0.001) of absolute neutrophils (pus cells) detected by peroxidase versus flow cytometer using CD53 monoclonal antibody. A poor correlation(r=0.39, p=0.035) of sperm counts assessed by manual technique and flow cytometer and a spurious sperm counts of 1.08 million/ml detected by flow cytometery in azoospermic patients. Flow cytometer could be used for the assessment of pus cells in semen but seems to be non reliable for the assessment of sperm count if gating depend on sperm size and granularity alone.