Is there an advantage to be gained from adding digital image cytometry of brush cytology to a standard biopsy protocol in patients with Barrett's esophagus?

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BACKGROUND AND STUDY AIMS: The current gold standard in Barrett's esophagus monitoring consists of four-quadrant biopsies every 1-2 cm in accordance with the Seattle protocol. Adding brush cytology processed by digital image cytometry (DICM) may further increase the detection of patients with Barrett's esophagus who are at risk of neoplasia. The aim of the present study was to assess the additional diagnostic value and accuracy of DICM when added to the standard histological analysis in a cross-sectional multicenter study of patients with Barrett's esophagus in Switzerland. METHODS: One hundred sixty-four patients with Barrett's esophagus underwent 239 endoscopies with biopsy and brush cytology. DICM was carried out on 239 cytology specimens. Measures of the test accuracy of DICM (relative risk, sensitivity, specificity, likelihood ratios) were obtained by dichotomizing the histopathology results (high-grade dysplasia or adenocarcinoma vs. all others) and DICM results (aneuploidy/intermediate pattern vs. diploidy). RESULTS: DICM revealed diploidy in 83% of 239 endoscopies, an intermediate pattern in 8.8%, and aneuploidy in 8.4%. An intermediate DICM result carried a relative risk (RR) of 12 and aneuploidy a RR of 27 for high-grade dysplasia/adenocarcinoma. Adding DICM to the standard biopsy protocol, a pathological cytometry result (aneuploid or intermediate) was found in 25 of 239 endoscopies (11%; 18 patients) with low-risk histology (no high-grade dysplasia or adenocarcinoma). During follow-up of 14 of these 18 patients, histological deterioration was seen in 3 (21%). CONCLUSION: DICM from brush cytology may add important information to a standard biopsy protocol by identifying a subgroup of BE-patients with high-risk cellular abnormalities.