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Micronuclei as biomarkers for evaluating the risk of malignant transformation in the uterine cervix

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ABSTRACT. We evaluated micronucleus and apoptosis occurrence among women with normal smears and women with different kinds of cervical abnormalities, i.e., inflammatory processes and low- and high-grade squamous intraepithelial lesions (N = 12, N = 10 and N = 27, respectively). The sample included 59 women who were seen at a public medical service for cervical cancer prevention in Feira de Santana, Bahia, Brazil. The diagnosis was established by means of cytological, colposcopic, and histopathological examination. Cytogenetic analysis was performed on 2000 cells from each woman and included assessment of micronuclei and nuclear degenerative

abnormalities indicative of apoptosis (karyorrhexis, pyknosis and condensed chromatin). Micronucleus frequency was significantly higher in the women with high-grade squamous intraepithelial lesions than in the women without cervical abnormalities or inflammatory processes ($P < 0.001$) or in the women with low-grade squamous intraepithelial lesions ($P < 0.005$). The frequency of apoptosis was similar in women without cervical abnormalities and women showing high-grade squamous intraepithelial lesions ($P > 0.50$), and significantly lower in women without cervical abnormalities and in women showing high-grade squamous intraepithelial lesions than in women showing inflammatory processes or low-grade squamous intraepithelial lesions ($P < 0.0001$). These results indicate that, in addition to Papanicolaou cervical cytological analysis, it would be useful to use micronucleus analysis to screen women who are at risk of developing cervical cancer. The assessment of nuclear degenerative abnormalities indicative of apoptosis increased the sensitivity of this test.

Key words: Micronucleus; Apoptosis; LSIL; HSIL

