

A Study on Differences between Radiation-induced Micronuclei and Apoptosis of Lymphocytes in Breast Cancer Patients after Radiotherapy

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Cancer patients' responses to radiotherapy vary in severity. It has been suggested that it may be due to differences in intrinsic cellular radiosensitivity. Prediction of tissue reactions to radiotherapy would permit tailoring of dosage to each patient. Towards this goal the micronucleus and apoptosis tests have been proposed as methods for measurement of chromosomal damage in peripheral blood lymphocytes. In this study, gamma-ray sensitivity of cultured lymphocytes of 26 breast cancer patients with early or late reactions was investigated. After irradiation with 4 Gy gamma radiation in G_0 , the frequency of micronuclei for patients with early reactions was significantly higher ($P < 0.05$) than for patients with late reactions. In the contrary the frequency of apoptosis for patients with early reactions was significantly lower ($P < 0.05$) than in the other group. It could be suggested that such a reduced amount of micronuclei in the late effects group is due to the presence of some residual DNA damages which are not completely repaired and lesions show increasing severity when the patients' cells are irradiated again. These induced damages, probably are high enough to stimulate other endpoints like apoptosis instead of micronuclei.

Key words: Breast Cancer, DNA Damage, Radiosensitivity