

DNA Damage and Repair of Head and Neck Cancer Cells after Radio- and Chemotherapy

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DNA repair is critical for successful chemo- and radiotherapy of human tumours, because their genotoxic sensitivity may vary in different types of cancer cells. In this study we have compared DNA damage and the efficiency of its repair after genotoxic treatment with hydrogen peroxide, cisplatin and γ -radiation of head and neck squamous cell carcinoma (HNSCC). Lymphocytes and tissue cells from biopsies of 37 cancer patients and 35 healthy donors as well as the HTB-43 larynx cancer cell line were employed. The cell sensitivity to genotoxic treatment was estimated by the MTT survival assay. The extent of DNA damage and efficiency of its repair was examined by the alkaline comet assay. Among the examined treatments, we found that HNSCC cells were the most sensitive to γ -radiation and displayed impaired DNA repair. In particular, DNA damage was repaired less effectively in cells from HNSCC metastasis than healthy controls. In conclusion, our results suggest that the different genotoxic sensitivity of HNSCC cells may depend on their DNA repair capacity what in turn may be connected with the effectiveness of head and neck cancer therapy.

Key words: Head and Neck Cancer, DNA Damage, Comet Assay