

## IS THE DNA DAMAGE AND REPAIR DETECTION IN HEAD AND NECK SQUAMOUS CELL CARCINOMA— MARKER OF RADIOSENSITIVITY?

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**H**ead and neck (H & N) tumors are aggressive neoplasms located close to vital structures. To avoid mutilating radical surgery non-surgical approaches (chemo / radiotherapy) are therefore preferred but only in about 50% of them, the treatment is efficient. This problem reflects the ongoing study with the main issue of determining tumour radiosensitivity in vitro prior to initiation of therapy. We isolated and prepared various cell primocultures obtained from head and neck cancer patients and after in vitro irradiation, analyzed DNA double-strand break (DSB) induction and repair dynamic. Obtained results were correlated with follow-up clinical data. Primocultures of several different cell types (normal fibroblasts, tumor-associated fibroblasts, and tumor cells per se) from patients' tumors and adjacent non tumorous mucosa were prepared. CD44+/-/CD90+/- subcultures were characterized in terms of tumorigenicity. The mixed CD90- + CD90+ cultures showed lower formation and faster disappearance of  $\gamma$ H2AX/53BP1 foci (a generally accepted marker of DSBs) than both of them cultivated separately. Cell cultures derived from the radiosensitive tumours showed significantly delayed DSB repair suggesting a genomic instability in tumors. Important gene mutations were present even in cells excised from cancer free mucosa predisposing thus a tumor development, or a precancerous change. A complex analysis of irradiation induced DNA damage; capacity and dynamics of the repair mechanism could contribute to understand the mechanism of radioresistance/ sensitivity.  $\gamma$ H2AX/53BP1 foci assessment could be a promising pre-treatment marker of radiosensitivity.

### Biography

Horakova Zuzana has completed MD in 2002 Medical faculty of Masaryk University, Brno and her PhD in 2004. She has been working as an ENT specialist in University Hospital in Brno a Olomouc. She has published more than 15 papers in reputed journals.

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