Different responses of two HNSCC cell lineages to oxidative stress

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Head and neck squamous cell carcinoma (HNSCC) has I2PP2A protein (SET) constitutively accumulated. SET inhibits protein phosphatase 2A (PP2A) that dephosphorylates protein kinase B (Akt), the main target in the PI3K signaling pathway, which is involved in cellular processes such as proliferation/survival and apoptosis. Akt has been described as crucial protein in the response of cell to oxidative stress, promoting its survival. We evaluated cell death by both MTT and annexin-V/propidium iodide (PI) assays in three HNSCC cell lineages, namely HN13, HN12 and HN6, exposed to oxidative stress induced by tert-butyl hydroperoxide (t-BHP 50 µM) for 12 h. The responses of HN13 and HN12 cells to oxidative stress were similar, but different responses were observed between HN13 and HN6 cells: while HN6 cells presented significant decrease in viability and double-stain with annexin-PI, HN13 cells were more resistant to death and did not stain with annexin-V; neither cells activated caspase-3 or PARP. HN6 cells showed higher levels of the SET protein and phosphorylated Akt (pAkt⁴⁷³); moreover, in HN6 cells, cleavage of LC3BII protein increased under oxidative stress. HN13 cells, in turn, presented higher basal levels of cleaved LC3BII, which were maintained under oxidative stress. These results suggest that autophagy is a process involved in either cell death or survival in HNSCC and that SET participates of this signaling via Akt phosphorylation. This is the first suggestion about SET function in autophagy in HNSCC.

Key words: autophagy, HNSCC, PP2A, SET, oxidative stress.
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