

## Invasion and migration behavior of HPV-positive and HPV-negative head and neck squamous cell cancer after single-dose and hypofractionated irradiation with chemotherapy and EGFR-inhibition

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Chemotherapy and irradiation of head and neck squamous cell cancer (HNSCC) differs depending on the HPV status. While HPV-negative HNSCC are associated with greater resistance to therapy and a poorer prognosis, HPV-positive HNSCC metastasize earlier. However, they respond better to chemoradiotherapy and have an improved overall survival. The aim of this study was to investigate the migration and invasion behavior of HPV-positive and HPV-negative HNSCC under chemotherapy with single-dose and hypofractionated therapy to further improving treatment options in order to improve survival. Methodology: The migration tendency was examined using a wound healing assay and the invasion behavior using an invasion chamber. Three HPV-negative and three HPV-positive HNSCC cell lines were treated with the cytostatics cisplatin and 5-FU, as well as the antibodies cetuximab and gefitinib in combination with single-dose and hypofractionated radiation. Findings: Invasion of HPV-negative cells was reduced even without radiation under chemotherapy and antibody therapy. There was no significant difference under irradiation. However, the invasion tendency of HPV-positive cells decreased under single-dose irradiation. Under hypofractionated therapy in combination with inhibitors, a significant decrease in invasiveness was shown. However, there was no difference between chemotherapy and antibodies. In terms of migration only EGFR antibodies showed a decrease even without irradiation. Under single-dose irradiation without further treatment the migration tendency of HPV-positive cell lines even increased. Here EGFR antibodies showed a decrease in both HPV groups under single-dose irradiation. In comparison, hypofractionated irradiation could not show any further difference in migration. Conclusion & Significance: Hypofractionated irradiation in combination with chemotherapy or antibody therapy is most effective in reducing the invasive tendency of HNSCC. EGFR antibodies only are potent in reducing migration. Hypofractionated irradiation with EGFR antibodies is only effective in HPV-negative cell lines. In HPV-positive cells, irradiation in general does not produce any significant results in terms of migration.

### Biography

Michael Aigner is an ENT-physician in Augsburg, Germany. While studying in Munich he began the above-mentioned research work at the Technical University of Munich under the direction of Professor Anja Pickhard.

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