Kateryna Musaieva, J Cancer Sci Ther 2016, 8:5 (Suppl)
http://dx.doi.org/10.4172/1948-5956.C1.067



# The prognostic utility of pre-treatment 18F-FDG-PET for salvage re-irradiation in head and neck cancer patients

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**Background:** Statistical image features of tumor metabolism from pretreatment 18F-FDG-PET/CT scans were studied for their potential to predict clinical outcome of salvage re-irradiation with intensity modulated radiotherapy (IMRT) for recurrent squamous cell carcinoma of head and neck (HNSCC).

**Materials & Methods:** Pretreatment PET/CT scans and after treatment PET/CT scans of patients who underwent IMRT re-irradiation for recurrent HNSCC, were retrospectively evaluated. Metabolic response was assessed using PET response criteria for solid tumors (PERCIST). Multiple statistical image features related to the standard uptake value (SUV) were computed: Metabolic tumor volume, maximum SUV, mean SUV, total lesion glycolysis (TLG). The correlation between the image features and local control and overall survival was calculated.

**Results:** Complete tumor metabolic response (CMR) was achieved in 5 patients (45.5%). Six patients failed to achieve CMR. Progressive metabolic disease was in 4 patients (36.4%); stable metabolic disease in one patient (9.1%); one patient had partial metabolic response (9.1%). The median follow-up time was 18.2 months. Out of the calculated image features, only pre-treatment tumor TLG (individual tumor volume multiplied by its mean SUV) correlated with tumor metabolic response in the early PET/CT follow-up. Also dividing the patient population based on the median tumor TLG showed a split of the Kaplan-Meier survival curves.

**Conclusions:** The tumor TLG of pre-treatment PET/CT scans has important information on the failure risk to achieve CMR in recurrent HNSCC patients. It is necessary to obtain additional patients data to validate these results.

## Biography

Kateryna Musaieva is currently a PhD student at National Cancer Institute, Kyiv, Ukraine and conducts research on metabolic tumor characteristics (pre and post-treatment 18F-FDG-PET/CT studies) of Head and Neck Cancer patients who undergo IMRT treatment. She also works as a Radiologist MD at PET/CT Department at a National Center of Radiosurgery. She has published 13 papers in reputed journals in Ukraine.

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