provide, medium and good prognosis group for the clinical cohort and trial cohort respectively, while (by definition) the training cohort had 25%, 50% and 25% distribution. This means the model was able to classify poor and medium prognosis patients in the clinical cohort but the good prognosis patient group was very small, as the clinical cohort population was older, had more advanced cancers, more nodal spread and more non-glottic cancers which are unfavorable for the survival prognosis.

**Materials and Methods:**

Enzymatic complex participating in immortality of cancer therapy application. One of the targets is telomerase as the role of telomerase in immortality state of HNSCC cell lines. Knock down of telomerase (TERT protein) by lentiviral vectors encoding shRNA on cancer cell lines derivated from HNSCC tumors (head and neck cancers are squamous cell carcinoma) and KB cells was carried out. The level of silencing was performed by qPCR and immunofluorescence staining. The impact of drugs (cisplatin and decetaxel) and ionizing radiation on the induction of apoptosis, cell cycle, γH2AX and cell proliferation rate via immunofluorescence staining, cytometer analysis and qPCR was also estimated. The telomere length measurement using a method based on qPCR was assessed.

**Results:**

There was shown an influence of telomerase depletion on apoptosis, proliferation rate and γH2AX expression both in non-treated control cell lines as on cell population after chemoradiotherapy. Moreover, the influence of telomerase knock-down on increased chemo-and radiosensitivity in vitro was proved.

**Conclusions:**

Our results demonstrate increased chemo- and radiosensitivity in HNSCC cell lines after telomerase silencing. Telomerase is likely to play a pivotal role in chemo- and radiosensitivity of selected HNSCC cell lines, however further studies are needed.

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**PD-0424**

**Immune response profile assessment after stereotactic radiotherapy for lung cancer**

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**Purpose/Objective:** Lung cancer is the most frequent malignant neoplasm with extremely poor prognosis. In earliest stages of the disease clinical benefit of radical surgical excision is similar to stereotactic body radiotherapy (SBRT). The success of high-dose SBRT is certainly related to the X-rays-induced apoptosis. However other, not-well characterized mechanisms may also contribute. We hypothesize that high dose SBRT causes an increase in the expression of multipetide tumor antigens, which further may lead to a stimulation of specific immune response. Those mechanisms are not fully understood therefore we have designed a prospective study to determine radiation-induced immune response changes. The protocol was approved by Local Ethical Committee.

**Objective:** To assess the effect of high dose ionizing radiation on changes in the expression of T cell activation markers (CD25, CD28, CTLA-4, PD-1) , transcription factors associated with Th1, Th2, Th17 and regulatory T cell subpopulations of CD4(+) T cells (T-bet, GATA-3, ROR-γt and FoxP3, respectively) in patients treated with SBRT for T1/2N0 M0 NSCLC.

**Materials and Methods:** Study group consists of patients with newly diagnosed NSCLC stage T1/2N0M0 qualified for SBRT. Patients with comorbidities of significant impact on immune system are excluded. Peripheral blood samples are collected three times from patients: before the treatment (n = 44), 2 weeks (n = 37) and 12 weeks (n = 21) after SBRT. Expression level of selected proteins on peripheral blood lymphocytes is measured by flow cytometry.

**Results:** The study was started in November 2013. Since then 44 consented patients were included. SBRT was planned and delivered according to the Department’s treatment standards. Analysis of blood samples has shown that SBRT significantly increases numbers of PD-1(+) and CTLA-4(+)
CD4(+) but not CD8(+) lymphocytes in peripheral blood of lung cancer patients (p<0.05). We have also observed higher levels of the T-bet(+)+ and ROR-y(+)-CD4(+) lymphocytes with decreased level of the FoxP3 (+) CD4(+) cells (p<0.05), and accumulation of GATA-3(+) CD4(+) lymphocytes specific for TH2 immune response.

Conclusions: In our study, 8.3% of patients had metastases 15 mm around the hippocampus, or less. Hence, a 15-mm margin around the hippocampus for conformal avoidance whole brain radiotherapy represents an unacceptable risk of disease progression after hippocampal avoidance during prophylactic whole-brain radiotherapy for small cell lung cancer.

PD-0426
A clinical model predicting severe esophagitis in individual SCLC patients treated with chemo-radiotherapy.

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Purpose/Objective: Severe radiation induced esophagitis is a frequent side-effect of concurrent accelerated chemoradiation for small cell lung cancer (SCLC). Pre-treatment predictive models can facilitate identifying high-risk patients to provide intensive nutritional support or prophylactic placement of a naso-gastric feeding tube.

Materials and Methods: We analyzed 240 consecutive patients with stage I-II SCLC from our prospective database, referred between December 2004 and March 2014 for concurrent platinum-etoposide and accelerated radiotherapy. All patients were FDG-PET-staged and received 45 Gy in 1.5 Gy fractions twice daily to the tumor and PET-positive or pathologically proven lymph nodes. 97% of patients received concurrent chemo-radiotherapy as planned, the remaining 3% of patients were treated sequentially. A total of 47 patients (20%) experienced dysphagia grade ≥3 (CTCAE 4.0).

A set of clinical (e.g. CT-stage, cN-stage, age, gender, WHO-PS, smoking status,...), biochemical (platelet count, hemoglobin and LDH at diagnosis) and radiotherapy planning parameters (e.g. mean (Dmean) and maximal dose (Dmax) to the esophagus, GTV,...) of potential relevance for esophagitis was retrieved for each patient.

We developed three distinct prediction models for dysphagia grade ≥3:

Model 1: based on classical clinical / biochemical factors only.
Model 2: based on the same set of parameters as Model 1, but replacing the classical nodal parameters (cN-stage, cN3-stage) investigated for model 1 by the number of treated nodal stations with close proximity to the esophagus (‘High Risk stations’ : 1L, 1R, 3P, 4L, 7, 8 and 9).
Model 3: based on both classical clinical / biochemical and planning parameters.

A bootstrap approach was used to assess how many variables should be included in the models: 2 or 3 variables for model 1, 3 for model 2 and 4 for model 3.

For each model individually the strongest combination of parameters from the data-set was composed using a backward selection procedure based on Akaike’s Information Criterion (AIC).

Results: For Model 1 the following variables were statistically significant: cT4 (yes/no), platelet count and gender, cN-stage...