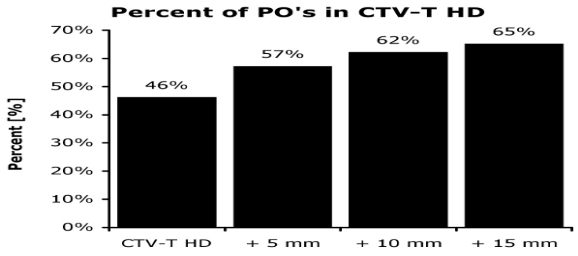

Figure 1. The percentage of PO´s included in CTV-T HD volume with increasing margins.

Conclusions: IMRT gives the opportunity to deliver highly conformal irradiation but also implies a potential risk to miss a part of the target. In this study, almost half of all LRF appeared in the CTV HD volume. When exploring margin extension of the CTV-T HD volume it was possible to include 11% more PO's by adding 5 mm extra margin. This does not implicate that increasing HD volume alone would reduce failure rate. The question of increasing volume and/or dose and the consequences for target and normal tissue will be further analyzed in a planning study.

PD-0444

18F-FLT PET; AN EARLY PREDICTOR OF OUTCOME AFTER (CHEMO)RADIOTHERAPY IN HEAD AND NECK CANCER

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Purpose/Objective: The aims of this prospective study were to monitor early treatment response of head and neck carcinoma by repetitive 3'-deoxy-3'-[18F] fluorothymidine (18F-FLT) PET imaging and to determine whether 18F-FLT PET parameters are associated with clinical outcome.
Materials and Methods: Forty-eight head and neck cancer patients underwent 18F-FLT PET-CT scans before and during the second and fourth week of (chemo)radiotherapy with curative intent. Maximum Standardized Uptake Values (SUVmax) of PET scans were registered, as well as PET-segmented gross tumour volumes using visual delineation (GTVVIS), adaptive threshold delineation based on signal-to-background ratio (GTVSBR) and 50% isocontours based on a fixed percentage of the maximum signal intensity in the primary tumour (GTV50%). Median follow-up was 32 months (range 8-52). PET parameters were evaluated for correlations with locoregional control and disease free survival.
Results: 18F-FLT uptake decreased significantly between consecutive scans. SUVmax decline ≥45% and GTVVIS decrease ≥41% (median) during the first two weeks of treatment was associated with better 3-year disease free survival (DFS) (88% *vs.* 63%, p=0.035; 91% *vs.* 65%, p=0.037, respectively). GTVVIS decrease ≥75% (median) in the fourth week of treatment was associated with better 3-year locoregional control (100% *vs.* 64%, p=0.025) and DFS (100% *vs.* 52%, p=0.006). These correlations were most prominent in the chemoradiation group. Already after two weeks of treatment, a 3-year DFS of 100% *vs.* 50% was observed in favour of patients with GTVVIS decrease ≥31% (median). Due to a sharp decline in 18F-FLT uptake, the automated delineation methods (GTVSBR and GTV50%) failed to accurately define tumour volumes during therapy.
Conclusions: In head and neck cancer patients, 18F-FLT uptake decrease measured using PET early during (chemo)radiotherapy is a strong prognostic indicator for clinical outcome. 18F-FLT PET may thus aid in personalized treatment strategies improving outcome while reducing (long-term) side-effects.

PD-0445

CIRCULATING TUMOR CELLS IN LOCALLY ADVANCED HEAD AND NECK CANCER: A POSSIBLE TOOL TO PREDICT RESPONSE TO TREATMENT?

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Purpose/Objective: The mechanism of dissemination of locally advanced head and neck cancer (LAHNC) is far to be resolved. Circulating Tumor Cells (CTC) have been identified as a prognostic factor in metastatic breast and prostate cancer. This prospective multi-centric analysis studied the possible role of CTC identification in LAHNC.
Materials and Methods: CTC were searched in 73 patients (pts) with LAHNC. The pts were managed in accordance with the local protocols. They were given radiotherapy, combined or not with chemotherapy and/or target therapy (Cetuximab), according to disease and patient characteristics.
CTC detection was performed with CellSearch Technology®, tested to identify squamous cell carcinoma.
The relationship between CTC positivity and other clinical prognostic factors has been investigated. Response to treatment and survival have been related with changes in CTC number during the treatment in 43 pts with almost 2 blood samples: 'neg-neg' if no CTC were present at diagnosis and at the end of the treatment; 'neg-pos' if no CTC were present at diagnosis and have instead been detected at the end of treatment; 'pos-less' if the number of CTC decreased during the treatment; 'pos-more' if the number of CTC grew during the treatment; 'pos-neg' if CTC disappeared after treatment.
Results: No CTC were identified in the 9 healthy subjects tested (100%). Median CTC number was 2 (range 1-43).
CTC were frequently identified in oro- and hypopharyngeal cancer and in sinonasal undifferentiated carcinoma. They are more frequent in stage IV than in stage I-III disease (18% vs 6%). No significant correlation was evidenced between CTC positivity at diagnosis and survival or relapse. Partial or complete response are however related with the absence or disappearance of CTC during treatment (p=0.017, Tab1). A decrease in CTC number or their absence throughout the treatment seem also related with non-progressive disease, after both complete or incomplete remission and with the proportion of pts alive and NED (p=0.009, Tab2).

Tab1

	CR/PR	NC
'neg-neg' 'pos-neg'	37 (90%)	0
'neg-pos' 'pos-less' 'pos-more'	4 (10%)	2 (100%)
Tot	41	2

Tab2

	alive NED	alive with disease	dead with disease
'neg-neg' 'pos-neg'	20 (95%)*	15 (88%)	2 (40%)
'neg-pos' 'pos-less' 'pos-more'	1 (5%)	2 (12%)	3 (60%)
Tot	21	17	5

Conclusions: These preliminary data suggest a possible role of CTC determination in head and neck cancer. The most important variable seems to be the evolution of CTC number during treatment: better response and NED survival is evident if CTC are always absent or if they disappear during the treatment. Additional and longer follow up data are needed to confirm these findings.
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