Purpose or Objective: Hypopharyngeal squamous cell carcinoma (HPSCC) is rarely diagnosed in early stage due to the nonspecific nature of early symptoms. Since its rarity, few reports regarding the treatment outcome are available and the most optimal treatment for early stage HPSCC has not yet been clarified. We assessed patterns of failure and factors that influence failures.

Material and Methods: total of 36 patients with pathologically confirmed stage I (n = 10) and II (n = 26) treated between January 1992 and March 2014 were retrospectively reviewed. Ten patients (28%) received definitive RT with a median fraction dose of 1.8 Gy (range 1.2–2.3 Gy) to median total dose 69.1 Gy (range, 60.8–70.2 Gy) (R group). Nineteen patients (53%) underwent surgery only (S group). Seven patients (19%) treated with surgery followed by postoperative RT with a median fraction dose of 1.8 Gy (range 1.2–2.3 Gy) to median total dose was 63.0 Gy (range 54.0–66.6 Gy) (PORT group). Twenty-six patients received surgery included mean excision/partial pharyngectomy (n = 20), total laryngectomy with partial pharyngectomy (n = 4), and total pharyngolaryngectomy (n = 2). Additionally, 4 of S group had no elective neck node dissection, seven patients had ipsilateral and eight patients had bilateral dissection. All of 10 patients in the R group and in the PORT group received elective bilateral neck irradiation.

Results: At a median follow-up of 48 months, the 5-year locoregional control rate (LRC) was 65%. Of the 36 patients, 5 patients had local failure (LF), one had regional failure (RF), three had combined locoregional failure (LRF) and two had distant failure. No differences were observed in the 5-year LRC among three groups (R, S, and PORT = 67%, 52%, and 100%, P = 0.17). In the RT group, 3 patients experienced LF without RF in the S group, 7 patients experienced LRF, 2 LF, 1 RF, and combined LRF. There was no LRF in the PORT group though resection margin status of patients in the PORT group were more risky than in the S group (Close/Positive margin 85% vs. 32%; P = 0.03) Patients with pyriform sinus apex extension showed a trend toward lower LRC (38% vs. 76%; P = 0.09). Patients with bilaterally treated neck (Treated neck group) showed lower trend of RF rate (4% vs. 27%; P = 0.08). Of the 10 patients who experienced LRF, 9 patients were successfully salvaged and 5-yr LRC after salvage treatment was 80%. Although late events of gastrostomy or tracheostomy were observed in 8 patients; 2 patients in the untreated or ipsilaterally treated neck group, 6 patients in the treated neck group (18% vs. 24%; P = 0.70)

Conclusion: Multimodal approach achieved favorable locoregional disease control despite of the risk factor. There is no difference in LRC between R group and S group. Prophylactic treatment of lymph nodes in the neck improves regional control in selected early HPSCC. Future research in the significance of tumor extension and elective neck treatment will be necessary to define the optimal treatment.

EP-1073
The usefulness of 18F-FDG PET and PET-based considerations in locally advanced nasopharyngeal cancer

Purpose or Objective: We investigated 18F-fluorodeoxyglucose positron emission tomography (PET)-derived parameters as prognostic indices for disease progression and survival in locally advanced nasopharyngeal carcinoma (NPC) and the effect of high-dose radiotherapy for a subpopulation with PET-based poor prognoses.

Material and Methods: Ninety-seven stage III and IVa-b NPC patients who underwent definitive treatment and PET were reviewed. For each primary, nodal and whole tumor, maximum standardized uptake value, metabolic tumor volume, and total lesion glycolysis (TLG) were evaluated. The primary endpoint was progression-free survival (PFS). PFS was calculated from the treatment start date to the date of disease progression, relapse, death from any cause, or last contact. Overall actuarial survival (OS) was calculated from the treatment start date to the date of death or the last follow-up. PFS and OS were calculated using the Kaplan–Meier method. The Contal and O’Quigley method was performed to determine the cut-off value for the most useful PET parameter from the C-index and IAUC to allow for dichotomization in an objective manner.

Results: The median follow-up duration among surviving patients was 47 months (range 8–127). Based on the C-index (0.666) and IAUC (0.669), the whole tumor TLG was the most useful predictor for progression-free survival (PFS); the whole tumor TLG cut-off value showing the best predictive performance was 322.7. The low-whole tumor TLG group showed significantly higher 5-year PFS (77.0% vs. 43.0%, P = 0.001), overall survival (OS) (85.7% vs. 54.0%, P = 0.003), loco-regional failure free survival (77.0% vs. 49.1%, P = 0.001) and distant-failure free survival (81.6% vs. 60.3%, P = 0.012) rates than the high-whole tumor TLG group. The whole tumor TLG was one of the significant prognostic factors for PFS (HR, 0.29; 95% CI, 0.13–0.64; P = 0.002) and OS (HR, 0.29; 95% CI, 0.11–0.79; P = 0.02) in multivariate analysis. Patients with low-whole tumor TLG showed higher 5-year PFS in the subgroup for only patients receiving intensity-modulated radiotherapy (77.4% vs. 53.0%, P = 0.01). In the subgroup of patients with high-whole tumor TLG, patients receiving an EQD2 ≥70 Gy showed significantly greater complete remission (71.4% vs. 33.3%, P = 0.03) and higher 5-year OS rates (74.7% vs. 19.6%, P = 0.02).

Conclusion: Our findings demonstrated that the whole tumor TLG could be an independent prognostic factor and high-dose radiotherapy could improve outcomes for NPC showing high whole tumor TLG.

EP-1074
Circulating cell free DNA: dynamics in patients with head and neck cancer during radiochemotherapy

Purpose or Objective: The analysis of circulating cell free DNA (cfDNA) in plasma samples of cancer patients (‘liquid biopsy’) is an upcoming option in detecting cancer characteristics, dynamics, prognosis and recurrence. Combining quantitative analysis, genetic information and clinical data appears as a promising tool in personalised medicine.

Material and Methods: In a prospective pilot study a total of 9 patients with head and neck cancer (median age 64.7 years) receiving primary radiochemotherapy were analysed regarding cfDNA dynamics and genetic alterations. Blood samples were taken prior to therapy, during therapy (week 1, 4, 6) and 6 weeks after end of treatment.
Results: Sequencing results of the tumours in the first three analysed patients showed somatic alterations of the cell cycle (TP53, CDKN2B), PI3K; AKT; RAS signaling cascades (ERBB3, HRAS, VHL, MTOR), chromatin regulation (TET2, ARID1A, KMT2A, EZH2, MEN1), Notch signaling (FBXW7, NOTCH1) and DNA damage response (BRCAl, MLH1). The amount of cfDNA varied among patients and during treatment. Quantitatively, in 5 patients the amount of cfDNA increased during therapy (after week 1). In 4 patients no initial relevant change could be seen (stable after week 1). Currently patients are in follow up for evaluation of clinical outcome.

Conclusion: Our initial results suggest that monitoring cfDNA identifies different patient subsets. As a proof of concept, detection of cfDNA is feasible and a potentially promising tool to identify tumour specific ‘finger prints’. Perspectives we hope to use cfDNA as a liquid biopsy and biomarker to identify individual tumour signatures to personalise treatments, detect mutations for targeted therapies and to monitor treatment response.

EP-1075
Squamous cell carcinoma of maxillary sinus : 25-years experience in a single institution
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Purpose or Objective: To evaluate the clinical outcomes to find optimal treatment and analyze prognostic factors for squamous cell carcinoma of maxillary sinus.

Material and Methods: Between January 1990 and December 2014, 97 patients with histologically proven squamous cell carcinoma of maxillary sinus without distant metastasis, treated with either radical surgery and adjuvant radiotherapy(Op+RT) or radical radiotherapy (RT). Median age at diagnosis was 61. There was no stage I patient and only 5 patients were stage II, all treated with Op+RT. Among twenty-three patients with stage III disease, fifteen patients were treated with Op+RT and eight patients were treated with RT. For stage IVA cancer, thirty-three patients received Op+RT, and twenty-eight patients were treated with RT. All eight patients with stage IVB cancer were treated with RT. Neoadjuvant chemotherapy and concurrent chemotherapy were used in forty-five and nineteen patients, respectively.

Results: Median follow-up period after diagnosis was 30 months for all patients. For stage III cancer, Op+RT showed better outcomes than RT (5-year OS : 63.8% vs. 29.2%, p=0.12; 5-year PFS : 43.2% vs. 18.8%, p=0.16), although not statistically significant. For stage IVA cancer, however, two treatment options showed no comparable results (5-year OS : 52.6% vs. 51.3%, p=0.80; 5-year PFS : 37.6% vs. 28.6%, p=0.53). Local failure was the most common pattern of failure, found in forty-two of ninety-seven patients (43.3%).

Conclusion: In squamous cell carcinoma of maxillary sinus, radical surgery followed by adjuvant radiotherapy should be recommended for stage III disease. For stage IVA, however, radical radiotherapy can be a good alternative option to surgery. Prophylactic neck treatment for initially node negative patients can prevent regional recurrence, with absolute risk reduction of about 15%. Masticator space invasion was found to be a bad prognostic factor for both treatment arms.

EP-1076
Phase II study of prophylactic radiotherapy in cNO HNSCC patients based on sentinel node(s) SPECT/CT
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Purpose or Objective: Due to a risk of 18 to 45% of occult nodal metastases in cNO HNSCC patients, prophylactic neck irradiation is often mandatory. Anyway, it leads to a large irradiation of normal tissues because bilateral drainage is the rule in only 30 to 50 % of individuals. Moreover, 15 to 30 % of the tumors drain in unpredicted nodal basins (risk of geographical miss). SPECT/CT lymphoscintigraphy of sentinel lymph nodes (SLN) could help individualizing prophylactic irradiation levels in cNO patients and, hence, reduce irradiated volume and improve quality of life (QoL). This ongoing prospective phase II study investigates its oncological safety.

Material and Methods: Twenty-six patients with newly diagnosed cNO SCC of the oral cavity, oropharynx, larynx or hypopharynx were included. All patients were imaged with SPECT/CT after 99mTc nanocolloid injection around the tumor. The neck levels containing up to four hottest SLN were identified and selected for prophylactic irradiation (CTVn-LS) by volumetric modulated arc therapy. A comparative virtual planning was performed with volumes selected according to international guidelines (CTVn-IG). QoL was assessed using EORTC C30 and HN25 scales.

Results: Migration was observed in all of the 26 patients (one with gamma probe only) with an average of 2.8 sentinel nodes detected per patient. CTVn-LS was totally encompassed by CTVn-IG in all patients but two with an unpredicted drainage in homolateral retropharyngeal levels. More than half of the patients has only a unilateral drainage. CTVn-LS and related PTV were systematically smaller than IG ones, by a factor of two on average. This led to significant dose decrease in identified OAR as well as remaining volume at risk. With a median follow-up of 24 months, no regional relapse was observed while 3 patients had a local one (11%). Crude overall survival rate is 89%. QoL preliminary data will be presented.

Conclusion: SPECT/CT lymphoscintigraphy of SLN allows individualizing prophylactic node CTV in cNO HNSCC patients eligible for definitive radiotherapy. Both CTV and PTV are systematically smaller than IG ones, by a factor of two on average. This led to significant dose decrease in identified OAR as well as remaining volume at risk. With a median follow-up of 24 months, no regional relapse was observed while 3 patients had a local one (11%). Crude overall survival rate is 89%. QoL preliminary data will be presented.

EP-1077
Could site, age and stage be clinical factors for development of adaptive RT in head-neck cancer?
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Purpose or Objective: The aim of this study is to identify prognostic factors of treatment related toxicity after