

Progression-free survival (PFS) and overall survival (OS) were estimated by the Kaplan-Meier method. Cox regression was performed to explore parameters in association with PFS and OS. The potential variables that were examined included age; gender; primary site; UICC stages; serum albumin, C-reactive protein (CRP), albumin-globulin ratio, body weight (BW) and body mass index prior to treatment; initial CBV and GTV; GTVRR during EBRT; IC; and CC.

Results: The median follow-up period was 23 months (range, 2-95 months). The 2-year PFS and OS rates were 51.3% [95% confidence interval (CI), 40.2-55.7] and 71.0% (95% CI, 58.4-72.6), respectively. PFS was associated with age [hazard ratio (HR): 1.029 (95% CI, 1.001-1.058), $p = 0.04$]; stage IV disease [HR: 3.755 (95% CI, 1.810-7.788), $p < 0.001$]; pretreatment CRP [HR: 1.077 (95% CI, 1.008-1.152) $p = 0.029$]; initial GTV [HR: 1.004 (95% CI, 1.000-1.007), $p = 0.026$]; and GTVRR during EBRT [HR: 0.99 (95% CI, 0.982-0.998), $p = 0.016$]. OS was related to stage IV disease [HR: 3.669 (95% CI, 1.667-8.071), $p = 0.001$]; GTVRR during EBRT [HR: 0.986 (95% CI, 0.975-0.997), $p = 0.012$]; and pretreatment BW [HR: 0.927 (95% CI, 0.892-0.963), $p < 0.001$].

Conclusion: This study suggested the prognostic value of clinical and volumetric status. Clinical stage, age, pretreatment CRP and BW, initial GTV, and shrinkage of GTV during treatment appear to be critical in the HNC treatment strategy.

EP-1044

Relations between cancer-related communication and dyadic adjustment in head and neck cancer patient

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Purpose or Objective: Head and neck cancer patients suffered from swallowing and speaking difficulties, neck pain and stiffness, and cosmetic disfigurement, resulting in interpersonal relationship troubles and social and emotional adaptation issues. Discussing cancer and the quality of communication when facing stress would affect partner's adaptation to cancer and quality of relationship. This study investigated the (Cancer-related) communication pattern, effect of disease characteristics in head and neck cancer. We used dyadic analysis to investigate the impact and process of communication pattern on quality of relationship.

Material and Methods: This study is cross-sectional design, and subject were the male patients who completion of cancer treatment more than 3 months and their partners with head and neck cancer, included 131 patient-partner dyads. Each participant completed the basic information questionnaire, Communication Pattern Questionnaire, Dyadic and Adjustment Scale.

Results: By treatment, there are no difference on cancer-related communication pattern for both patient and partner. Both patient and partner, their perception of mutual constructive communication was associated with more quality of relationship, Demand-withdraw communication and mutual avoidanc was associated with less quality of relationship. Using the Actor-Partner interdependence model (APIM), result revealed that although each person's cancer-related communication pattern is the strongest predictor of their own quality of relationship, partner's perception of communication pattern also play significant role on patient's quality of relationship. According to APIM, only the partner perceived communication pattern could be accounted for by their influence on quality of relationship.

Conclusion: We found that cancer-related communication and interaction of relationship among couples play an important role in the head and neck adjustment process. Thus, except the medical care, clinicians concern with interaction between patient and partner can be enhance their psychological adjustment and illness, particularly the partner's perception of communication pattern, which may

improve the quality of relationship and life adaptation of both couples when they are dealing with head and neck cancer.

EP-1045

Phase I study for evaluation of the safety of high-dose hypofractionated RT in early glottic cancer

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Purpose or Objective: Reducing overall treatment time has advantages for patient convenience, but also for local control as shown by former studies. Critical organs in the neck causes concern in relation to long-term morbidity and quality of life, but with recent advances with high-precision image-guided and intensity-modulated radiotherapy (IMRT) techniques, avoidance of the organs at risk has become possible. The purpose of this study is to develop an image-guided high-dose hypofractionated vocal cord irradiation technique to treat patients with early stage glottic cancer.

Material and Methods: Eligible patients with early stage glottic cancer provided with informed consent will receive hypofractionated radiotherapy to the larynx with a simultaneous boost to the gross tumor. The fraction size will be stepwise increased from 3.5Gy (total dose 59.4Gy) to 9Gy (total dose 45Gy). To proceed to the next dose level, at least 7 patients should be confirmed that they have no toxicity more than grade 2 after 3 month post-RT. The organs at risk include the larynx, contralateral vocal cord, arytenoids, carotid arteries, inferior pharyngeal constrictor muscle, and spinal cord.

Results: Four patients were enrolled to receive 59.4Gy with 3.5Gy per fraction until July 2015. None of the patients developed toxicity more than grade 2 after 1 month post-RT. The mean equivalent dose in 2Gy fractions (EQD2) to contralateral arytenoid, thyroid gland, inferior pharyngeal constrictor muscle, and larynx were in average 69.5Gy, 12.3Gy, 50.8Gy, and 66.5Gy, respectively. No portion of the carotid arteries were irradiated more than 50 Gy (EQD2) in the IMRT plan. After 3 months of follow-up, all 4 patients demonstrated no more than grade 3 toxicities. Also, all patients showed complete remission by laryngoscopy.

Conclusion: The high-dose hypofractionated IMRT technique provided good sparing of critical structures and resulted in no severe toxicity after a short term follow up. We will continuously perform this phase I clinical trial to stepwise increase the fraction size up to 9Gy.

EP-1046

High dose-low energy intraoperative radiotherapy in the treatment of malignant H&N tumors

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Purpose or Objective:

Objective: The aim of this study was to investigate the feasibility of high dose-low energy intraoperative radiation (IORT) therapy using INTRABEAM® (Carl Zeiss Surgical, Oberkochen, Germany) in the treatment of malignant Head & Neck tumors.

Methods and Materials: Between March 2014 and July 2015, 12 patients with head and neck cancers (seven with primary malignant parotid tumors and five patients with previously treated recurrent head and neck cancer) received intraoperative radiation therapy after surgical resection at Loyola University Medical Center (Maywood, IL). The median dose prescription was 6Gy (range, 5-14Gy) prescribed to 5mm

depth in a single fraction delivered with cylindrical shaped flat applicators attached to a 50kV x-ray energy source (INTRABEAM). The flat applicator (sizes 3-6cm) was placed at the high-risk area within the surgical cavity, which was delineated by the surgeon as the area with high likelihood for close or positive margins. The average IORT delivery time was 20 minutes. The single IORT fraction was the sole treatment for all patients with recurrent, previously treated patients and in one patient with parotid tumors, while the remaining six patients with parotid malignancies received additional external beam radiotherapy (EBRT) (median dose 50Gy) four weeks after surgery. Decision for EBRT were based on review of final pathology.

Results: All patients underwent successful completion of intraoperative radiotherapy. With follow up time of 5 to 18 months, there have been no acute side effects or complications related to IORT. All patients with parotid tumors are currently NED; in patients with recurrent tumors, 1 of 5 has re-recurred.

Conclusion: IORT with low kv x-rays appears to be an excellent choice for selected patients with H&N cancers, both primary (parotid) and recurrent disease.

We are now in the process of initiating a prospective trial evaluating the use of IORT as part of primary management of parotid tumors at our institution.

Detailed results will be presented.

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EP-1047

Volume, FDG-PET and ADC responses could predict a similar prognostic benefit as HPV status

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Purpose or Objective: Patients treated with concurrent chemoradiation (CCRT) for head and neck cancer (HNC) with HPV(+) associated tumours have a significantly better prognosis compared to those with HPV(-) tumours. Similarly, better prognosis was associated with changes during-treatment consisting of either a reduction in tumour volume, or FDG-PET SUV, or an increase in ADC. This study investigated a possible association between these imaging biomarkers and HPV status. Our hypothesis was that HPV(+) tumours show a stronger ADC increase and a larger volume and SUV decrease.

Material and Methods: 13 Patients with HNC stadium III-IVA underwent CCRT (11 oropharynx, 1 hypopharynx and 1 oral cavity). HPV status was assessed using P16 staining. Patients received FDG-PET and MRI imaging before the start of the treatment and at the end of the second week. The region of interest consisted of the GTV and was delineated by dedicated radiation-oncologists. The volume and the median SUV and ADC were measured pretreatment and during treatment. Relative responses were calculated by subtracting the pretreatment from the during treatment value, which was then normalized to the pretreatment value. A new variable (pooled response) was computed consisting of the average of the relative SUV and volume decrease and ADC increase. A one tailed independent samples t-test compared the average responses between the HPV(+) and HPV(-) tumours. Voxel-based Pearson correlation coefficients between baseline and response maps were calculated for ADC and FDG-PET. A Fisher's z-transformation was used to compare the correlation coefficients between HPV(+) and HPV(-) tumours.

Results: 7 out of 13 tumours were HPV(+) and 6 HPV(-). Comparing HPV(+) to HPV(-), GTV volume decreased 42% vs

28% (p=0.080), SUV decreased with 32% vs 5% for (p=0.074) and ADC increased 24% vs 7% (p=0.058) (figure 1). The total response was significantly higher for HPV(+) tumours (33% vs 13%, p=0.012). Correlation coefficients between baseline and response maps did not differ significantly for HPV(+) and HPV(-) tumours (PET: z= 1.05 vs 1.08 p=0.85, ADC: z=0.47 vs 0.51, p=0.78).

Conclusion: Volume, ADC and FDG-PET individually showed a trend towards a higher response in the HPV(+) tumours at the end of the second week CCRT. The total response was significantly higher for HPV(+) tumours, demonstrating a significant association between HPV-status and imaging biomarkers. The similar correlation coefficients of the response maps indicate the spatial distribution does not depend on HPV status. This study emphasises the importance of reporting HPV status in imaging response biomarker studies for HNC patients. A validation of the prognostic value of imaging response biomarkers within HPV(+) and (-) cohorts is warranted.

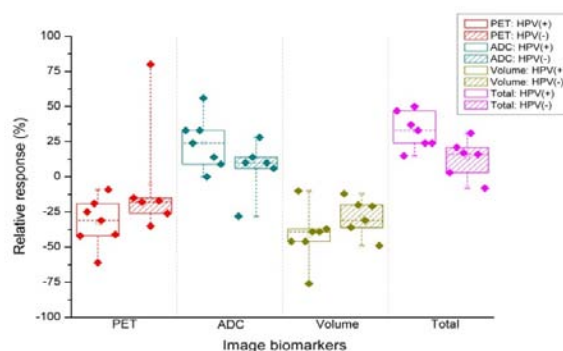


Figure 1: Box plots of relative responses at the end of the second week CCRT. Individual patients are represented as data points. Negative values represent a decrease, positive an increase.

EP-1048

Phase I trial of a novel metalloporphyrin radiosensitiser (MTL005) in head and neck cancer

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Purpose or Objective: MTL005 is a novel metalloporphyrin that demonstrated efficacy as a radiosensitizer in oxic and hypoxic pre-clinical models, increasing tumour doubling times by 50-90% depending on radiation dose. MTL005 achieved higher concentrations in tumour tissue compared with normal tissues (6:1 ratio), and these higher levels were retained for up to 62 days post administration. We developed a first-in-human phase I, open label, dose escalation, multicenter clinical trial to evaluate the safety and tolerability of single dose MTL005 in combination with radiotherapy (Part 1) and cisplatin chemo-radiotherapy (Part 2) in patients with locally advanced head & neck cancer treated with palliative and curative intent respectively. The results of Part 1 of the study are reported.

Material and Methods: In Part 1 of the study MTL005 was administered 1 week prior to palliative radiotherapy as i.v. injection in 38-76 minutes. Two dose levels were explored (2 and 4 mg/kg). Patients were immobilised in a thermoplastic mask and a contrast enhanced CT scan was used to define the PTV and the organs at risk. Radiotherapy was delivered with IMRT with a total dose of 50Gy to the PTV in 25 consecutive