>48cc group was 90% vs 46% (chi square p = .001). ROC curve analysis of our oropharyngeal subgroup revealed similar results with a cut off of 48cc with AUC of 0.802 (0.677-0.927) and sensitivity / specificity of 86%/70%. The RR for the >48cc and >48cc group was 88% vs 40% (chi square p = .001). The likelihood of not responding increased by 1.8% for 1cc increase in TTV for the entire cohort and by 2.4% for our oropharyngeal subgroup.

**Conclusion:** Our study shows that the TTV is a significant and independent prognostic factor in patients with locally advanced head and neck cancer in terms of predicting local control. Implications for existing management paradigms include, stratification according to TTV in future randomized trials and consideration of altered fractionation and/or dose escalation to the primary disease for patients with TTV>48cc.

**EP-1095**

**Prognostic role of FDG PET-CT performed before and during radiotherapy for nasopharyngeal cancer**

P. Lin, M. Min, M. Lee, L. Holloway, D. Forstner, V. Bray, A. Fowler

Liverpool Hospital, Nuclear Medicine and PET, Liverpool, Australia

Liverpool Hospital, Cancer Therapy Centre, Liverpool, Australia

Liverpool Hospital, Ingham Institute of Applied Medical Research, Liverpool, Australia

**Purpose or Objective:** To evaluate the prognostic value of 18F-FDG PET-CT performed prior to (prePET) and during the third week (iPET) of radiation therapy (RT) in patients with newly diagnosed nasopharyngeal carcinoma (NPC).

**Material and Methods:** Thirty patients with newly diagnosed NPC treated with radical RT and Cisplatin-based chemotherapy underwent prePET and iPET. The median follow up was 26 months (range 8-66.9). AJCC staging included 12 patients in stage II, 8 in stage III and 10 in stage IV. The maximum standardised-uptake-value (SUVmax), metabolic-tumour-volume (MTV) and total-lesional-glycolysis (TLG) of primary tumour (PT), the index-node (IN) (defined as metabolic tumor volume (MTV) and total-lesional-glycolysis (TLG) of primary tumour (PT)), the index-node (IN) (defined as metabolic tumor volume (MTV) and total-lesional-glycolysis (TLG)) of primary tumour (PT) and the index-node (IN) (defined as metabolic tumor volume (MTV) and total-lesional-glycolysis (TLG)) of primary tumour (PT) were best predictors: 100% vs. 75.0%, p=0.014 and 100% vs. 47.6%, p=0.002. For DFS, prePET IN TLG and iPET IN SUVmax were best predictors: 87.5% vs. 33%, p=0.045 and 78.7% vs. 20%, p=0.01. For OS, prePET IN TLG and iPET IN TLG were best predictors: 100% vs 72.7%, p=0.048 and 91.7% vs. 66.8%, p=0.05. The IN metabolic parameters demonstrated stronger correlation with outcome than PT or PTN, and equivalent correlation to the TN except IN was better in predicting OS.

**Conclusion:** The metabolic parameters of prePET and iPET can provide complementary prognostic biomarkers of patient outcomes. These parameters may have a role in adaptive therapy for NPC, and identifying the best treatment strategy for precision individualised chemo-radiotherapy combinations. We have demonstrated IN to be a useful novel imaging biomarker for predicting all treatment outcomes, and offers additional potential advantage of ease of generation and reproducibility compared to TN or PTN.
Results: With a median follow up of 34 months, the 3-year LC, PFS and OS (with 95% confidence intervals) were 64% (53% - 75%), 51% (39% - 62%) and 77% (67% - 87%), respectively. No image features were significantly correlated with LC or PFS and adding image features to the clinical variables did not improve the performance of the Cox model in the bCV setting, as seen in Table 1 where the C-index is highlighted in bold if adding image features improved performance.

Conclusions

Adding image features to complement clinical parameters was seen to improve the prognostic value for OS. Although no significant image features were found related to LC and PFS, we found that a smaller MTV was predictive of improved OS.

Comparison of outcomes and toxicities between IMRT and SIB-IMRT in cancers of hypopharynx
M.S. Raghunathan1, R. Subramaniam1, A. Vaz1, N. Senthil Kumar1
Kovai Medical Center And Hospitals, Department Of Radiation Oncology, Coimbatore, India

Purpose or Objective: Among cancers of head and neck, hypopharyngeal cancers tend to have an aggressive clinical course. Chemoradiation has become the standard of care for patients who are candidates for an organ preservation strategy. IMRT planning has incorporated a simultaneous integrated boost (SIB-IMRT) in order to efficiently develop comprehensive radiation therapy plans and also potentially lessen treatment time and toxicity. Outcomes and toxicities of patients with hypopharyngeal cancers treated in a single institute with standard IMRT and SIB-IMRT schedules were analyzed retrospectively.

Material and Methods: A total of 86 patients with hypopharyngeal squamous cell carcinomas were treated between September 2010 and December 2014. Among 44 patients who were treated using SIB-IMRT, 8 received neoadjuvant chemotherapy (NACT) and 42 received concurrent chemotherapy. Among 42 patients who were treated using IMRT with conventional fractionation (IMRT), 16 received NACT and 40 received concurrent chemotherapy. The dose for SIB-IMRT group was 65 Gy in 30 fractions to gross and high risk disease and 54 Gy in 30 fractions to low-risk nodes. The dose in IMRT group was 66-70 Gy to gross disease, 60 Gy to high risk nodes and 50 Gy to low risk nodes in 1.8-2 Gy per fraction.

Results: At a median follow-up of 16.5 months (6-56 months) the median OS of entire cohort was 38.9 months. The mean OS was 37.5 months and 38.3 months (p=0.91) for SIB-IMRT and IMRT respectively. The mean treatment duration for SIB-IMRT and IMRT groups was 42 days (range: 38-51 days) and 48.4 days (range: 45-73 days) respectively. 98 % in SIB-IMRT and 93 % patients in IMRT group completed the intended treatment. Complete response was noted in 89 % and 93 % in SIB-IMRT and IMRT groups respectively. Grade 3 mucositis occurred in 10 (23%) and 12 (28%), grade 3 dermatitis in 9 (20.5%) and 12 (28%) of SIB-IMRT and IMRT patients respectively. Grade 2 xerostomia occurred in 11 patients (27%) and 15 patients (34%) in IMRT and SIB-IMRT groups. Grade 3 soft-tissue fibrosis and esophageal stricture rates were 2 (4.7 %) and 5 (11.4%) in SIB-IMRT and IMRT groups.

Conclusion: Clinical outcomes, acute and late toxicities of chemo-radiation with SIB-IMRT were comparable with IMRT. Overall treatment duration was reduced and more patients completed intended treatment in SIB-IMRT group with relatively lesser acute toxicities.

Radiation induced brachial plexopathy in head and neck carcinoma (acute and chronic)
S. Yahya1, M. Hickman1, A. Hartley1, P. Sanghera1
Hall-Edwards Radiotherapy Research Group- Queen Elizabeth Hospital, Cancer Center, Birmingham, United Kingdom

Purpose or Objective: Radiation Therapy Oncology Group (RTOG) guidelines recommend brachial plexus dose constraints ranging from 60-66Gy in 2Gy per fraction (BED = 120-132Gy2). However there remains limited data on brachial plexus (BR.P) toxicity and furthermore the dose limits are...