Conclusion: 18F-FDG PET/CT is useful to target volumes delineation for radiotherapy planning, allowing a clear definition of GTV, not detected with 131I WB5. Disease response and local control justify future prospective studies.

EP-1051
Long-term quality of life and second tumours in T1N0 glottic cancer treated with radical radiotherapy
R. Benlloch Rodríguez1, J. Romero Fernandez1, D. Rincón Cruz2, G. Martín Hernández2, J.R. García-Berrocal1, B. Vaguero Barrón1, I. Zapata Paz1, O. Álvarez montero1, S. Gonzalo Ruiz1, A. De la Torre Tomas1
1Hospital Universitario Puerta de Hierro, Radiation Oncology, Madrid, Spain
2Complejo Asistencial de Ávila, Radiation Oncology, Ávila, Spain

Purpose or Objective: To evaluate long-term results, prognostic factors, quality of life (QoL) and voice and thyroid toxicity and risk of second tumors in T1N0M0 glottic carcinoma.

Material and Methods: A total of 100 patients with stage T1N0M0 histologically proven squamous cell glottic carcinoma treated between 2000 and 2012 were retrospectively analyzed. Mean age: 62.14 years; 90 males, 10 female; stage: T1a:80, T1b:20. Treatment: radical external radiotherapy with a mean dose of 70 Gy (2Gy/fraction). Statistical analysis was performed with Kaplan-Meier estimation and Cox regression analysis. In 35 patients, we prospectively evaluated the Voice Handicap Index (VHI 30) and the QoL with (EORTC)–QLQ C30 questionnaire and organ-specific EORTC-Head & Neck-35 module. In the functional and QoL scales of the QLQ C30 questionnaire a higher score represents better functioning and quality of life, whereas in symptoms scales of both questionnaires a high score implies a higher level of symptoms. The last two questions in QLQ C30 represent a QoL range from 1 (“very poor”) to 7 (“excellent”). Blood determination of TSH, T4, T3 levels was performed in 19 patients. Second primary tumors were defined as those originated outside the head and neck area.

Results: Median follow-up: 91.5 months. Five-and 10-year actuarial OS and disease free survival were 83% and 70%, and 70% and 94% respectively. Eighteen patients had recurrent disease. Mean time to local recurrence was 80 months. Sex, stage and Overall Treatment Time were not statistically significant prognostic factors. Mean score (MS) for the VHI30 was 19.16, which is considered as a minimal amount of voice handicap. Patients reported excellent QoL in the C30 questionnaire which showed functional scores above 93 and symptoms scores below 14. The global health status and QoL scale were 5.93 and 6, respectively, which should be considered as “good” or “very good”. In the H&N 35 questionnaire the worse scores were dry mouth and thick saliva (MS 30.6 for both). Most patients have no problems in open mouth, swallowing, speaking and social contact (MS of 0, 6.9, 18.6 and 16.6, respectively). There were no patients with clinical or subclinical hypothyroidism. Mean TSH, T3, and T4 were 2.32, 3.16 and 1.31, respectively. Mean TSH was not statistically different from normal values (P: 0.34) Eighteen patients (18%) had second tumors: 11 lungs, 2 prostates, 5 others. Ten years probability of second lung cancer was 28%.

Conclusion: In our series radical radiotherapy for T1 glottic cancer was well tolerated and achieved excellent tumor control comparable to surgery. In our opinion radical radiotherapy should be the standard treatment of these patients given the excellent results in QoL and voice preservation. The high probability of second lung cancer could justify performing thoracic CT scan during follow-up.

EP-1052
Treatment outcome of induction bio-chemotherapy followed by IMRT in advanced NPC patients
P. J. Lin1, W.Y. Wang1, Y.C. Liu1, J.C. Lin1
1Tung’s Taichung MetroHarbor Hospital, Department of Radiation Oncology, Taichung, Taiwan
2Hung Kuang University, Department of Nursing, Taichung, Taiwan
3Taichung Veterans General Hospital, Department of Radiation Oncology, Taichung, Taiwan

Purpose or Objective: We investigated the treatment outcome of induction bio-chemotherapy followed by IMRT for advanced nasopharyngeal carcinoma (NPC) and the prognostic impact of plasma EBV DNA viral load.

Material and Methods: Forty-two NPC patients with previously untreated, stage III/IV received induction chemotherapy of weekly P-FL (cisplatin 60 mg/m2 d1, 5-fluorouracil 2500 mg/m2 d1-5) + docetaxel 50 mg/m2 or gemcitabine 1000 mg/m2 d15, for 10-12 weeks and concurrent Cetuximab 400 mg/m2 day 1, then weekly 250 mg/m2. Conventional (70 Gy/35fr) or hyperfractionated (76.4 Gy/64fr for T4 tumor) RT were delivered before IMRT technique. Plasma EBV DNA levels were measured before, during and after treatment regularly.

Results: Baseline characteristics are median age=44; male/female=28/14; performance status ECOG 0/1=13/12; stage III/IV=22/20, and pathological type (WHO) III/IV=20/22. Each patient received a mean of 11 weekly cetuximab. During induction bio-chemotherapy period, cetuximab-associated toxicity included 100% skin rashes (grade 50% III/IV), 64.3% (27/42) dry skin, 52.4% (22/42) paronychia, and 28.6% (12/42) hypomagnesia. Grade III/IV conventional toxicities were rare (11.9% leucopenia, 9.5% anemia, 2.4% thrombocytopenia, and 2.4% mucositis). Response after induction bio-chemotherapy revealed 50% CR and 50% PR. After a median follow-up of 24 months, there were 1 local, 1 regional, and 5 distant failures. The 3-year local failure-free, neck failure-free, distant metastasis failure-free (DMFS), progression-free survival (PFS), and overall survivals (OS) were 96.6%, 96.0%, 87.4%, 79.9%, and 92.1% respectively. Patients with high pretreatment plasma EBV DNA predict significantly lower PFS and DMFS (P=0.0108 and P=0.004) but not OS (P=0.6291). Patients with detectable plasma EBV DNA after bio-chemotherapy had a significantly lower OS, PFS, and DMFS (P=0.0294, P=0.0078, and P=0.0082). Patients with persistently detectable plasma EBV DNA one week after IMRT predict a significantly lower PFS (P=0.0258).

Conclusion: Induction Bio-chemotherapy followed by IMRT is a highly effective protocol with very low toxicity in advanced NPC. Plasma EBV DNA monitoring are the most important prognostic factors in outcome prediction.

EP-1053
Toxicity and clinical outcome for patients treated for advanced head and neck cancer with VMAT-SIB
E. Villa1, C. Franzese1, A. Fogliata1, D. Franceschini, G.R. D'Agostino1, E. Clerici1, P. Navarria1, T. Comito1, F. De Rose1, C. Iftode1, A.M. Ascolese1, A. Tozzi1, R.L.E. Liardo1, P. Mancosu1, N. Scorsetti1
1Istituto Clinico Humanitas, Radiotherapy and Radiosurgery, Rozzano Milan, Italy

Purpose or Objective: The choice of fractionation scheme in radiotherapy of head and neck cancer (HNC) is still debated. In fact it is well known that a shorter overall treatment time and a dose escalation, may improve loco-regional control of disease by reducing cell repopulation. Nevertheless, shortening overall treatment time can result in worse acute toxicity. Volumetric modulated arc therapy (VMAT) with Simultaneous Integrated Boost (SIB), allowing hypofractionation with a better sparing of the organs at risk, has shown promising results in terms of outcome and pattern of toxicity. In this study we retrospectively analyzed a series of patients with stage III-IV HNC treated with VMAT-SIB
radiotherapy, with the aim to verify possible correlations between the planned dose distributions to the main dose limiting structures and the observed levels of toxicity like mucositis, xerostomia and dysphagia.

Material and Methods: Data of histologically confirmed advanced HNC patients, in stage III and IV (AJCC), were reviewed in a retrospective dosimetric and clinical evaluation. Patients were treated with VMAT (RapidArc) and SIB in 33 fractions for a total dose of 69.96 Gy to the tumor and positive-nodes, and 54.45 Gy to the elective volume, respectively. Toxicity was graded according to CTCAE3.0. Correlation was explored between OAR dose parameters and related acute and late toxicities.

Results: From December 2008 to August 2014, 102 patients were treated. Acute mucosal and swallowing toxicities higher than grade 3 were reported in only 11% and 6% of patients, respectively; late morbidities (G1-G2) were present in only 3% of cases. No G3 Toxicity was reported. A statistically significant correlation was found between the dosimetric parameters of oral cavity V30Gy, V40Gy, and V70Gy, and mucosal toxicity ($p = 0.01, 0.03,$ and $0.05$, respectively). Concerning salivary glands, late toxicity profile was worse compared to acute side effects, with 19% of persisting late grade equal or higher than 2. Regarding the constrictors and the swallowing toxicity, most of the dosimetric parameters of the inferior constricor muscle (mean dose, D1/2V, D1/3V, D2/3V) were significant at the univariate analysis, while no correlations were found for middle and superior constrictors. With a median follow-up of 19 months (range 1-61 months), Overall Survival (OS) at 3 and 5 years was 83%±4% and 73%±10%. Mean OS was 51±3 months. Disease Free Survival (DFS) at 3 and 5 years was 71±7%, and 34±16%. Mean DFS was 43±3 months.

Conclusion: Volumetric modulated arc therapy (VMAT) with Simultaneous Integrated Boost (SIB), that allow a shorter overall treatment time, a dose escalation, associated with a better sparing of OARs, showed a good toxicity profile. From our analysis toxicity to dose-limiting structures was significantly correlated to the dosimetric parameters explored.

EP-1054
Temporal patterns of patient-reported trismus and associated mouth-opening distances in RT of HNC
M. Thor1, C.-E. Olsson2, J.H. Oh3, J. Hedström4, N. Pauli4, J.O. Deasy1, C. Finizia4
1Memorial Sloan Kettering Cancer Centre, Department of Medical Physics, NYC, USA
2Institute of Clinical Sciences- Sahlgrenska Academy at the University of Gothenburg, Department of Radiation Physics, Gothenburg, Sweden
3Memorial Sloan Kettering Cancer Center, Department of Medical Physics, NYC, USA
4Institute of Clinical Sciences- Sahlgrenska Academy at the University of Gothenburg, Department of Otolaryngology- Head and Neck Surgery, Gothenburg, Sweden

Purpose or Objective: To investigate the association between temporally robust domains of patient-reported trismus symptoms with mouth-opening ability as assessed by maximal interincisal opening distance (MIO) in head and neck cancer (HNC) patients treated with radiotherapy (RT).

Material and Methods: The study included 196 patients previously treated with primary state-of-the-art RT for HNC in 2007-2012. A five answering-category-based (no/mild/moderate/severe/very severe symptom) patient-reported trismus questionnaire (Gothenburg Trismus Questionnaire, GTQ) was completed pre-RT, and at 3, 6, and 12 months post-RT. This study focuses on the 14/21 potentially RT-induced physical trismus symptoms from GTQ. At each follow-up, symptom domains were generated by means of factor analysis and these symptoms were correlated with MIO (categorized into five intervals (mm): 1: >50; 2: >40-≤50; 3: >35-≤40; 4: >25-≤35; 5: ≤25) for each follow-up using Pearson’s correlation coefficient (Pr).

Results: The three symptom domains Jaw aches/pains, Jaw-related problems, and Eating limitations were identified at each follow-up, and included one, two and three temporally robust symptoms, respectively. Correlations between MIO and these symptoms were weak to modest (Pr= 0.22-0.58; Table) with the overall stronger correlations for ‘Opening mouth difficulty’ and ‘Current mouth-opening ability’ in the Jaw-related problems domain at 6 and at 12 months post-RT (Pr=0.49-0.58; Figure).

Conclusion: Mouth-opening distances can be explained in terms of associated patient-reported symptom severities on jaw-related problems. Translating the patient’s experience into objective measurements and vice versa widens possibilities to monitor and possibly prevent progression of trismus symptoms after RT.

EP-1055
Determination of EGFR in lesions of the oral cavity and evaluating the role of Gefitinib
V. Umesh1
1All India Institute Of Medical Sciences-New Delhi, Radiation oncology, New Delhi, India

Purpose or Objective: Determination of expression of EGFR in premalignant and malignant lesions of the oral cavity and evaluating the role of Gefitinib in the same

Material and Methods: 130 Patients with premalignant and malignant lesions of oral cavity from JK cancer institute, Kanpur were selected. EGFR status evaluation was done in all the patients. Premalignant lesions over expressing EGFR were randomly divided into 2 groups first group consisted of patients who were given CCRT(cisplatin). The other group had the same regimen but with the addition of Tab Gefitinib 250 mg daily

Results: Out of 130 patients registered 53 were premalignant out of which EGFR(+) positive in 73%(39) patients. EGFR(++)over expression were in 8%(4)patients, EGFR negative in 18%(10) patients. 77 were malignant lesions EGFR positive in 89%(51) patients. EGFR(++)in 38%(27) of patients, EGFR(++) in 40%(28) patients .EGFR(++) were expressed by 11%(11) patients. EGFR negative in 11%(11 patients)