Target volume delineation in locally advanced squamous cell carcinoma of the head and neck (SCCHN) using FDG-PET/CT images post-induction chemotherapy (IC)

**Background:** Current guidelines define that pre-IC target volumes must be used for radiotherapy (RT) planning. This prospective, phase II trial assessed the results of pts with SCCHN treatment with IC following by chemoradiotherapy (CRT), using post-IC PET/CT images for RT planning.

**Methods:** Two PET/CT were performed: one prior IC, and one 2 weeks after 3 cycles of IC: docetaxel 75mg/m2, cisplatin 75mg/m2 and 5-FU 750 mg/m2 day 1-5. The gross tumor (GTVt) and nodal (GTVn) volumes on the post-IC PET/CT scans were contoured. The CTVt and CTVn were obtained by GTVt and GTVn plus 5 mm respectively. The elective CTV included CTVt, CTVn and bilateral elective lymphnodes. The margin of 3 mm was added to each CTV to create the PTVs. For PTVt and PTVn the prescribed doses were 70 Gy and 60 respectively, for PTVel – 50 Gy. CRT consisted of a chemotherapy with cisplatin (40 mg/m2 weekly) and RT (2 Gy once daily, 5 days a week). The primary end points was PFS. Secondary end points were OS and treatment safety. Acute toxicities were assessed using CTCAE v.4.0, late toxicities - using RTOG /EORTC criteria.

**Results:** 47 pts with histologically confirmed SCCHN (oro- and hypopharyngeal), KPS 70% and intact organ function were included. The mean follow-up period was 17.2 (2-30.5) months. The mean OS was 25.3 months (95% CI, 22.5-28.1) and mean PFS was 23.2 months (95% CI, 20.3-26.1). The 2-years PFS and OS rate were 75% and 76%, respectively. The most common acute toxicities of grade 3-4 were febrile neutropenia 20%, leucopenia 26.7%, mucositis 37.8%. Late toxicities of grade 3 were: dysphagia 2.2% and xerostomia 8.9%. **Conclusion:** This study is promising for new target delineation strategies for SCCHN after IC. Further analysis is required to ascertain the influence of FDG-PET/CT in target delineation and main clinical outcomes.