Reduction of target volume post induction chemotherapy using PET/CT in locally advanced HNSCC

V. Rudzianskas[1], E. Korobeinikova[1], E. Jaselske[2], D. Adliene[2], A. Inciura[1], M. Rudzianskiene[1]

[1]Oncology Institute of Lithuanian University of Health Sciences
[2]Physics Department of Kaunas University of Technology

Objectives:

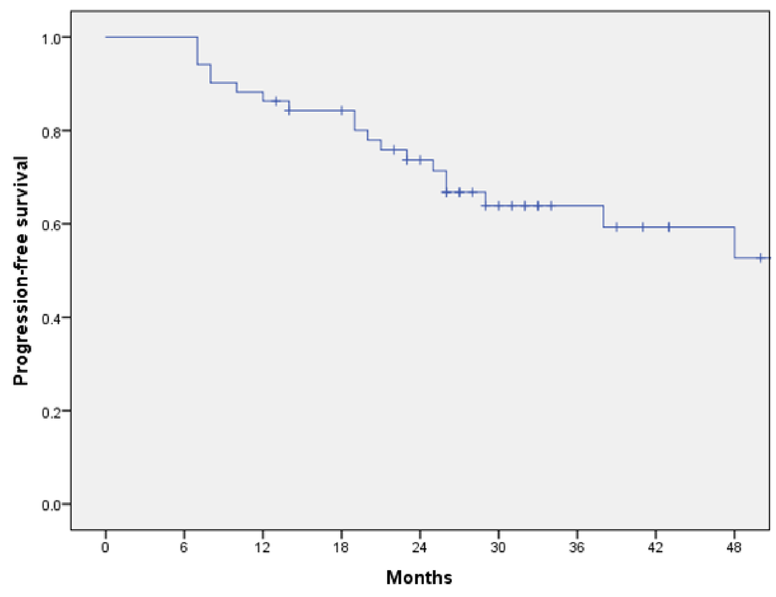
Current guidelines define that pre-ICT primary site and nodal GTVs must be used for radiotherapy (RT) planning [1, 2]. Superiority of post-IC (induction chemotherapy) GTV (gross tumour volume) over pre-IC GTV has not been still tested. We assessed the results of patients with locoregionally advanced head and neck squamous cell cancer (LASCCHN) treatment with IC following by chemoradiotherapy (CRT), using post-IC PET/CT images for IMRT planning [3, 4].

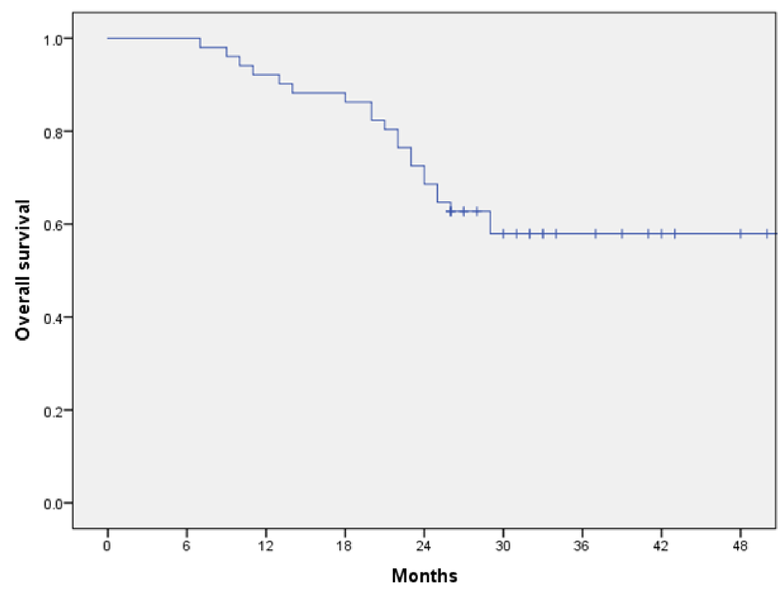
Methods:

Two PET/CT were performed: one prior IC, and one 14 days after 3 cycles of IC (docetaxel 75mg/m2, cisplatin 75mg/m2 and 5-FU 750 mg/m2 day 1-5). The gross tumour volume (GTV70) and gross nodal disease (GTV60) on the post-IC PET/CT scans were contoured by the radiation oncologist working in cooperation with an experienced nuclear medicine physician. The boost clinical target volume (CTV70) and nodal clinical target volume (CTV60) were obtained by GTV70 and GTV60 plus 5 mm respectively. The elective CTV (CTV50) included CTV70, CTV60 and bilateral elective lymphnodes. The margin of 3 mm was added for each CTV to create the planning target volumes (PTV70, PTV60 and PTV50). For high-risk volumes (PTV70 and PTV60) the prescribed doses were 70 Gy and 60 Gy respectively, for PTV50 – 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 were PFS. The secondary end points were OS and treatment toxicities. Acute toxicities were assessed using CTCAE v.4.0, late toxicities - using RTOG /EORTC criteria.

Baseline patient and tumour characteristics

Characteristics	n (%)
Age (years)	
Median (range)	55.5 (30-71)
Sex	
Male	45 (95.7%)
Female	2 (4.3%)
Primary tumour site	
Oropharynx	30 (63.8%)
Hypopharynx	17 (36.2%)
Tumour status (T)	
T2	26 (55.3%)
T3-4	21 (44.7%)
Lymph node status (N)	
N0-1	14 (29.8%)
N2-3	33 (70.2%)
Tumour stage	
III	12 (25.5%)
IV	35 (74.5%)
Histological grade	
G1-2	7 (14.9%)
G3-4	40 (85.1%)





Results:

47 patients with histologically confirmed LASCCHN (oro- and hypopharyngeal), all HPV negative, KPS 70% and signed written informed consent approved by the Lithuanian Bioethics Committee were included. The mean follow-up period was 36 (7-55) months. The mean PFS was 41.7 months (95% CI, 35.9-47.4), and mean OS was 41.6 months (95% CI, 36.3-46.9). The 3-years PFS and OS rate were 64% and 58%, respectively. The most common acute toxicities of grade 3-4 were febrile neutropenia 20%, leukopenia 26.7%, mucositis 37.8%. Late toxicities of grade 3-4 were: dysphagia 2.2%, xerostomia 8.9% and osteoradionecrosis 2.1%.

Conclusions:

This study is promising for new target delineation strategies for LASCCHN after IC. Further analysis is required to ascertain the influence of FDG-PET/CT in target delineation and main clinical outcomes. This work was performed in the frame of the project “Development of 3D phantom for individualized dosimetry in radiotherapy (No. S-MIP-17-104) and was partly supported by the research grant of Lithuanian Research Council.

References:

1. Salama JK, Haddad RI, Kies MS, et al. Clinical practice guidance for radiotherapy planning after induction chemotherapy in locoregionally advanced head-and-neck cancer.Int J RadiatOncolBiol Phys 2009;75:725-33.
2. Vicente AMG, Castrejón AS, Londoño GAJ. PET/CT in radiotherapy planning in head and neck cancers. MédecineNucléaire 2015;39:465-70.
3. Doornaert P, Dahele M, Verbakel WF, et al. The effect of induction chemotherapy on tumor volume and organ-at-risk doses in patients with locally advanced oropharyngeal cancer. Radiother Oncol 2013;109:269-74.
4. Francesca De F, Daniela M, Vincenzo T. Target volume delineation after induction chemotherapy in locally advanced head and neck cancer. Oral oncol 2015;51:e81.

ESTRO37 EP-1111

Clinical track: Head and Neck

Viktoras Rudzianskas

DOI: 10.3252/pso.eu.ESTRO37.2018

Poster presented at: ESTRO 37

PosterSessionOnline.com