PET/CT versus standard imaging for prediction of survival in patients with recurrent HNSCC


Published in:
Radiotherapy & Oncology

DOI:
10.1016/S0167-8140(19)30284-1

Publication date:
2019

Document version:
Final published version

Document license:
CC BY

Citation for published version (APA):

Go to publication entry in University of Southern Denmark's Research Portal

Terms of use
This work is brought to you by the University of Southern Denmark.
Unless otherwise specified it has been shared according to the terms for self-archiving.
If no other license is stated, these terms apply:
• You may download this work for personal use only.
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying this open access version

If you believe that this document breaches copyright please contact us providing details and we will investigate your claim.
Please direct all enquiries to puresupport@bib.sdu.dk

Download date: 31. Oct. 2023
should always be considered for correct staging in these patients. No statistically significant association was found between primary tumor SUVmax values and tumor responses in this study. This may be due to lack of clinical response data with \(^{18}\)FDG PET/CT, which was available only in 16 out of 38 patients.

PO-117 Can we reduce the posterior margins during irradiation of nasopharyngeal cancer?
L. Farhat, N. Fourati, W. Mnekka, Z. Fessi, T. Sahnoun, W. Siala, J. Daoud
1Hospital Habib Bourguiba, Radiation Oncology, Sfax, Tunisia

Purpose or Objective
The deep situation of the nasopharynx, close to several critical organs, makes radiotherapy sometimes difficult especially in cases of advanced tumors. Several authors propose a reduction of margins after 1mm to spare the brainstem. The aim of this study was to evaluate the setup errors intensity modulated radiotherapy (IMRT) for nasopharyngeal carcinoma (NPC) to determine if a margin reduction is possible especially in posterior direction.

Material and Methods
Data from 25 patients with NPC treated by IMRT in our institution during 1 year (2016-2017) were analyzed to define the set-up errors. A five points mask was used for patient’s immobilization. A margin of 3mm in all directions was added to the clinical target volume (CTV) for the definition of the planning target volume (PTV). Portal images (PI) were realized 3 times a week to check the correct positioning of patients during treatment. Mean displacement, systemic (I) and random (σ) errors in antero-posterior (AP), medio-lateral (ML) and supero-inferior (SI) direction were calculated. Setup margins were estimated using Van Herk’s formula.

Results
A total of 1250 PI were realized during treatment period. The mean displacement in AP, ML and SI direction was +0.39 mm (- 3mm to 8 mm), +0.24 mm (-5 to 18 mm) and +0.15 mm (1 to 7 mm). Systematic errors were 0.3 mm, 0.7 mm and 0.6 mm in AP, ML and SI direction respectively. Random errors were 1.9 mm, 1.7 mm and 2.4 mm in AP, ML and SI direction respectively. CTV to PTV margins were 2.1mm, 3.0 mm and 3.2 mm in AP, ML and SI direction respectively.

Conclusion
The results of our study confirm that the margin of 3 mm used in our department is sufficient for the good coverage of the target volume. However, further reduction of these margins posteriorly is not possible regarding the set-up margins errors in our institution. A daily control of the positioning is necessary if a reduction beyond 2mm is required for brainstem preservation in case of tumors with posterior extension.

PO-118 PET/CT versus standard imaging for prediction of survival in patients with recurrent HNSCC
M. Rohde, J. Johansen, J.A. Sørensen, A.L. Lerberg, J.T. Asmussen, P.F. Hellund-Carlsten, C. Godballe
1Odense University Hospital, Department of ORL - Head & Neck Surgery and Audiology, Odense, Denmark; 2Odense University Hospital, Department of Oncology, Odense, Denmark; 3Odense University Hospital, Department of Plastic Surgery, Odense, Denmark; 4Odense University Hospital, Department of Nuclear Medicine, Odense, Denmark; 5Odense University Hospital, Department of Radiology, Odense, Denmark

Purpose or Objective
To examine whether staging with \(^{18}\)F-FDG-PET/CT (PET/CT) provides better prediction of survival in patients with recurrent head and neck squamous cell carcinoma (HNSCC) than chest X-ray + head and neck magnetic resonance imaging (CXR/MRI) or chest computed tomography + head and neck MRI (CCT/MRI).

Material and Methods
A prospective cohort study based on paired data. Consecutive patients with histologically verified HNSCC recurrence were enrolled from September 2013 to March 2016. All patients underwent CXR/MRI, CCT/MRI, and PET/CT on the same day and prior to biopsy. All imaging studies were interpreted blindly by separate teams of experienced nuclear physicians and/or radiologists. Recurrent carcinomas were categorized as localized (equivalent to primary stages I-II), locally advanced (equivalent to primary stages III-IVB), or metastatic (equivalent to primary stage IVc). Discriminative abilities for each imaging strategy with respect to cancer-specific and stage-based survival were compared using Kaplan-Meier analysis, Cox proportional-hazards regression with Harrell’s C-index, and net reclassification improvement (NRI).

Results
A total of 110 patients (90 males and 20 females, aged 66 y, range 40-87) were included. PET/CT significantly changed the assigned tumor stage when compared with imaging strategies based on CXR/MRI or CCT/MRI (p<0.001 for both). Kaplan-Meier analysis of PET/CT-based staging showed progressively worsened prognosis with localized, locally advanced, or metastatic disease (log-rank test: p<0.001), whereas CXR/MRI and CCT/MRI were unable to distinguish between these groups in terms of survival (log-rank test: p=0.18 and p=0.58). Overall discriminative ability in predicting cancer-specific mortality was significantly greater for PET/CT (C-index: 0.72) than for CXR/MRI (C-index: 0.55, p=0.001 for difference) and CCT/MRI (C-index: 0.55, p<0.001 for difference). The addition of PET/CT to either CXR/MRI or CCT/MRI was associated with a significantly positive NRI (p=0.001 for both).

Conclusion
Contrary to standard imaging strategies, PET/CT-based staging in recurrent HNSCC was able to discriminate significantly between survival courses of patients with local, locally advanced or metastatic disease and predict their respective survival probability.

PO-119 Pattern of failure in Head and Neck cancer after definitive RT-CT based on pre-treatment \(^{18}\)FDG PET/CT uptake
L. Deantonio, L. Vigna, V. Amisano, L. Masini, P. Aluffi, G.M. Sacchetti, G. Loi, M. Krengli
1University Hospital Maggiore della Carità, Radiotherapy, Novara, Italy; 2University Hospital Maggiore della Carità, Medical Physics, Novara, Italy; 3University Hospital Maggiore della Carità, Otalaryngology, Novara, Italy; 4University Hospital Maggiore della Carità, Nuclear Medicine, Novara, Italy

Purpose or Objective
To analyse the pattern of failure in relation to pre-treatment \(^{18}\)FDG PET/CT uptake in head and neck squamous cell carcinoma (HNSCC) patients treated with definitive radiochemotherapy (RT-CT).

Material and Methods
From 2012 to 2016, 87 head and neck cancer patients treated with definitive CT-RT with IMRT-SiB underwent