Poster: Clinical track: Head and neck

PO-0632

Dose-volume related dysphagia in head and neck cancer Intensity Modulated Radiation Treatment

F. Ricchetti[1], R. Mazzola[1], A. Fiorentino[1], S. Fersino[1], N. Giaj Levra[1], S. Naccarato[1], G. Sicignano[1], R. Ruggieri[1], G. Di Paola[2], F. Alongi[1]

[1]*Ospedale Sacro Cuore Don Calabria, Radiation Oncology, Negrar (Verona), Italy*

[2]*University of Palermo, Statistic Science Faculty, Palermo, Italy*

Purpose/Objective: Dysphagia remains a side effect influencing quality of life for head and neck cancer (HNC) patients after radiotherapy. We evaluated relationship between planned dose involvement and acute and late dysphagia in HNC patients treated with Intensity Modulated Radiation treatments, after a re-contouring of constrictors muscles (PCs) and cricopharyngeal muscle (CM).

Materials and Methods: Between December 2011 and December 2013, 56 patients, with histologically proven HNC, were treated with IMRT or VMAT. The PCs and CM were re-contoured. We used recent guidelines to define dose-constraints of constrictors muscles (PCs) and cricopharyngeal muscle (CM). Correlations between acute and late toxicity and dosimetric parameters were evaluated. Endpoints were analyzed using univariate logistic regression.

Results: Median follow up was 24 months (range 10-36 months). An increasing risk to develop acute dysphagia was observed when constraints to middle PC are not respected (Dmean ≥ 50Gy, Dmax >60Gy, V50 >70% with a p=0.05). Superior PC was not correlated with acute toxicity, but only with early-late dysphagia (until to 6 months after radiotherapy). The inferior PC is not correlated with dysphagia; for cricopharyngeal muscle only Dmax > 60Gy is correlated with acute dysphagia ≥ G2. No correlations were found at 12 months of follow up. Univariate logistic regression analysis for clinical parameters showed a significant correlation with oropharynx primary site (p-value < 0.05) and acute/late disphagia. Late xerostomia ≥ G2 is statistically related with late disphagia ≥ G2 (p-value < 0.05).

Conclusions: Superior PC has a major role, being correlated with dysphagia at 3 and 6 months after the treatments; the middle PC mantains this correlation only at 3 months from beginning of radiotherapy but it does not have influence on late dysphagia. Inferior PC and CM have a minimum impact on the swallowing symptoms.

PO-0633

Parotid shrinkage during IMRT for oropharyngeal cancer as a signal of gland reactivity: a longitudinal study

G. Sanguineti[1], A. Farneti[1], W. Binbin[2], T. McNutt[2], C. Fiorino[3]

[1]*Regina Elena National Cancer Institute, Radiotherapy, Rome, Italy*

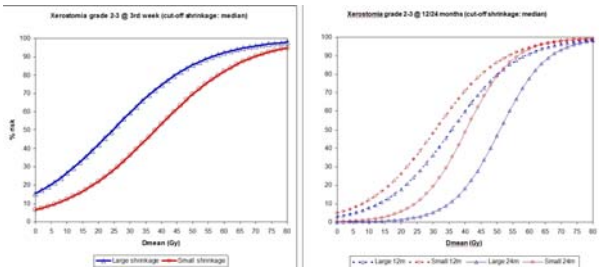
[2]*Johns Hopkins, Radiotherapy, Baltimore, USA*

[3]*San Raffaele Institute Scientific, Medical Physics, Milan, Italy*

Purpose/Objective: Previous analyses showed that a larger parotid gland (PG) shrinkage and a lower PG Dmean predicted a faster recovery from xerostomia (XERO) in a group of 85 patients (pts) treated in a single institute for oropharingeal SCC with IMRT. On the contrary, data on a previously analysed subgroup of 25/85 pts, showed a larger PG shrinkage to predict a more intensive (severe and persistent) XERO in the acute phase. Data were re-analyzed by considering PG shrinkage as surrogate of a higher reactivity to RT in terms of precocity of XERO and subsequent faster recovery.

Materials and Methods: All patients included in the study were treated with IMRT (+ CHT in 75/85 pts) from 10/2007 to 06/2010 and underwent to weekly CT scans during treatment. PG were contoured on the mid treatment CT scan and the % change relative to the planning CT and the weighted average shrinkage were calculated for each PG/pt. XERO was defined as ≥ grade 2 dry mouth according to CTCAE v3.0 and was assessed weekly during IMRT and then at 3, 6, 12 and 24 months. Large and small PG shrinkage pts were defined taking the median shrinkage at mid treatment as a cut-off (19.5%). PG shrinkage was found to better discriminate between patients with and without acute XERO when considering the score at the 3rd week; then, for current investigation, XERO at the 3rd week, at 12 and 24 months (XERO3w,12m,24m) were considered:. Uni and multi-variable logistic models (retaining in the model variables with p-value<0.20) were assessed considering weighted average PG shrinkage, PG mean dose (of each parotid and the weighted average WA_Dmean) and selected clinical variables (including chemotherapy, age, sex, BMI).

Results: Regarding XERO3w and XERO24m models including WA_Dmean and a large PG shrinkage were the most predictive with a moderate discriminative power (AUC: 0.67-0.72, p<0.04); the impact of large PG shrinkage was inverted between the two times, being predictive of an increased risk for XERO3w (OR:2.6, 95%CI:1.0-6.7) and protective for XERO24m (OR:0.24 95%CI:0.07-0.83). The same two variables were considered to predict XERO12m, despite the impact of large PG shrinkage was modest (not significant, p=0.30). The corresponding two-variable model was moderately predictive and of borderline significance (AUC:0.65, p=0.09) and was in line with a progressive shift of the two curves (large *vs* small shrinkage) passing from XERO3w to XERO24m (see Figure).



Conclusions: For a given WA_Dmean, patients whose PG largely shrink during IMRT are less likely to be long-term supplemental fluids dependent and, at the same time, have an increased risk to experience early XERO. This result suggests PG shrinkage as a quantitative score of the individual reactivity to IMRT, showing that pts with early XERO better recover from the damage. PG shrinkage alone to predict XERO may be a confounding factor if not combined with the dosimetry information.