Volumetric regression ratio of the primary tumor and metastatic lymph nodes after induction chemotherapy predicts overall survival in head and neck squamous cell carcinoma: a retrospective analysis

Olgun Elicin, Michael Schmücking, Jens Bromme, Daniel Rauch, Pinar Ambarcioğlu, Ludwig Plasswilm, Andreas Geretschlager, Pirus Ghadjar, Roland Giger & Daniel M Aebersold

PURPOSE
We looked for any predictive value of change in primary tumor and metastatic lymph node volumes after induction chemotherapy (IC) on oncologic outcome in head and neck squamous cell carcinoma (HNSCC).

METHODS
Nineteen patients with stage IVA/B HNSCC treated between 2004 and 2010 with at least one cycle of IC (docetaxel, cisplatin and 5-fluorouracil/TPF) and concomitant chemoradiotherapy (CRT) with cisplatin were retrospectively analyzed. Volumes were calculated separately for primary tumor (Vtm), lymph node metastases (Vln) and their sum (Vsum) on computed tomography (CT) images before and after IC. The effect of volumetric changes on locoregional failure (LRF), distant metastasis (DM) and overall survival (OS) was assessed. P values <0.05 were considered as statistically significant.

RESULTS
The median follow-up of surviving patients was 25 months (range: 10.7-83.3). The median number of cycles and duration of TPF was 3 (range: 1-4) and 44 days (range: 4-116), respectively. Empirical area under the curve (AUC) analyses for death, LRF and DM revealed optimal cut-off values of Vtm diminution (30.54%, AUC: 87%) and Vsum decrease (35.45%, AUC: 64.55%) only for OS (p <0.05). Among those, a reduction in Vsum more than 35.4% between pre- and post-IC was significantly correlated with better OS (100 vs 43% at 2 years, p <0.05).

CONCLUSION
Volumetric shrinkage of the tumor load after IC assessed with CT seems to predict OS. The assessment of volumetric shrinkage upon IC might be used to decide whether to offer patients alternative strategies like palliative/de-
intensified treatments or more aggressive combined modalities after IC.

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<tr>
<td>ISSN print</td>
<td>1107-0625</td>
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<tr>
<td>pages</td>
<td>175-81</td>
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