
0.0.1 Abstract

Purpose/Objective

Whereas the prevalence of lymph node level (LNL) involvement in head and neck squamous cell carcinoma (HNSCC) has been reported, the details of lymphatic progression patterns are insufficiently quantified. In this study, we investigate how the risk of metastases in each LNL depends on the involvement of upstream LNLs, T-category, Human Papillomavirus (HPV) status and other risk factors.

Results

We retrospectively analyzed patients with newly diagnosed oropharyngeal squamous cell carcinoma (OPSCC) treated at a single institution, resulting in a dataset of 287 patients. For all patients, involvement of LNLs I-VII was recorded individually based on available diagnostic modalities (positron emission tomography (PET), magnetic resonance imaging (MRI), computed tomography (CT), fine needle aspiration (FNA)) together with clinicopathological factors. To analyze the dataset, a web-based graphical user interface (GUI) was developed, which allows querying the number of patients with a certain combination of co-involved LNLs and tumor characteristics.

Results

The full dataset and GUI is part of the publication. Selected findings are: Ipsilateral level IV was involved in 27% of patients with level II and III involvement, but only in 2% of patients with level II but not III involvement. Prevalence of involvement of ipsilateral levels II, III, IV, V was 79%, 34%, 7%, 3% for early T-category patients (T1/T2) and 85%, 50%, 17%, 9% for late T-category (T3/T4), quantifying increasing involvement with T-category. Contralateral levels II, III, IV were involved in 41%, 19%, 4% and 12%, 3%, 2% for tumors with and without midline extension, respectively. T-stage dependence of LNL involvement was more pronounced in HPV negative than positive tumors, but overall involvement was similar. Ipsilateral level VII was involved in 14% and 6% of patients with primary tumors in the tonsil and the base of tongue, respectively.

Conclusions

Detailed quantification of LNL involvement in HNSCC depending on involvement of upstream LNLs and clinicopathological factors may allow for further personalization of elective clinical target volume (CTV-N) definition in the future.