Tissue micro array based evaluation of the central DNA double-strand break repair protein KU80 as a prognostic marker in HNSCC

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Introduction:
HNSCC represent a heterogeneous entity with regard to localization, outcome and biology. Especially for locally advanced HPV-negative tumors there is still a great need to improve cure rates. So far the HPV-status in OPSCC is the only generally accepted prognostic biomarker and no predictive markers have been established. In a comparison of 39 potential markers, Moeller et al. had identified high expression of the central DNA repair protein KU80 as a strong predictor of overall survival in HPV-negative HNSCC treated by primary radiotherapy (Clin Cancer Res. 2011 Apr 1;17(7):2035-43). So far, these data have not been recapitulated. In the present study we have analyzed the expression of KU80 in an HNSCC tissue micro array (TMA) largely composed of tumors treated with surgery +/- adjuvant radio (chemo)therapy or definite radiochemotherapy.

Results:
In our analyses KU80 expression was not associated with UICC, T or N stage. High nuclear expression levels of KU80 is a common feature in HNSCC as 78.4% of tumors in our cohort were scored “strong” whereas only 10.6% of tumors were scored “negative” or “weak”. With regard to survival, we did not observe any statistically significant differences or trends that would suggest a prognostic role of high or low KU80 expression levels in our cohort, neither in early nor in locally advanced stage tumors and irrespective of HPV-status.

Methods:
A tissue micro array, containing 553 HNSCC samples, was stained for KU80. The immunohistological staining of the tissue samples was scored as negative, weak, moderate or strong by an established algorithm based on staining intensity (0, 1, 2, 3) and the percentage of tumor cells stained.

Conclusions:
Strong nuclear KU80 expression is common in HNSCC, our analyses show a trend towards a better survival in negative / low expressing HPV negative tumors, representing app. 10% of the study population. The role of Ku 80 needs to be confirmed in larger studies.