

Morphological assessment of the tumour microenvironment in squamous cell carcinoma

Sampson, J.; Craig, S.; McQuaid, S.; Salto-Tellez, M.; James, J.A.

Queen's University Belfast, Belfast, United Kingdom

Multiple studies have highlighted the prognostic role of the tumour microenvironment (TME) in squamous cell carcinoma (SCC) of various sites. Despite this, microscopic assessment of the TME in SCCs has not been adopted into routine practice.

Based on the findings of previous published studies, we assessed and scored tumour-infiltrating lymphocyte (TIL) density, stromal percentage and tumour budding in representative H&E-stained whole tumour sections from a cohort of 173 treatment-naïve, clinically annotated HPV-positive (n = 66) and HPV-negative (n = 107) oropharyngeal SCC cases.

Preliminary analysis indicates a low TIL density (<50% stromal compartment occupied by lymphocytes) is associated with a worse prognosis in both HPV cohorts (HPV-positive p = 0.0004, HPV-negative p = 0.04) while high stromal percentage (≥50%) was only shown to be prognostic in HPV-positive but not the HPV-negative oropharyngeal SCC (HPV-positive p = 0.0001, HPV-negative p = 0.09); tumour budding (≥5 tumour buds per case) was not found to be associated with survival in either HPV-positive or negative oropharyngeal SCC.

In conclusion, our preliminary analysis suggests that microscopic assessment of stromal percentage and TIL density may provide prognostic information in oropharyngeal SCC in an HPV dependent manner. Validation of these preliminary findings using digital-based image analysis is ongoing; we are also extending this study to include SCCs of the lung and oesophagus, incorporating a detailed assessment of other predictive/prognostic biomarkers that could underpin effective stratification of patients to receive immunotherapy.