Final report: Validation of the prognostic marker CD103 in nasopharyngeal carcinoma

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Nasopharyngeal carcinoma (NPC) is endemic in China, eastern Europe and northern Africa where its incidence ranges from 4-25 cases per 100,000 individuals, 50-100 times greater than observed in other parts of the world. The Epstein-Barr virus (EBV), a ubiquitous herpesvirus carried latently by nearly all humans, is the causative infectious agent in nearly all NPC cases in endemic regions. Discovered in the context of infection, tissue resident memory T-cells (TRMs) are a population of non-recirculating CD8+ T cells and their presence and role in NPC has yet to be defined. TRMs develop in response to viral or bacterial infections, and permanently reside in the previously infected non-lymphoid tissue. Upon exposure to the same antigen, TRMs rapidly expand and recruit other immune cells to mount an effective immune response. Recently, it has become apparent that TRMs play an important role in oncosurveillance and may predict responses to immune checkpoint inhibition. High abundance of TRMs in many other cancers are associated with improved survival. Here, we characterize the expression CD103+ cells, a marker of TRMs, in a cohort of clinically annotated NPC samples, explore the gene profiles of CD103+ high tumors and the prognostic significance of CD103 expression. We found that a high proportion of NPC tumors have a high abundance of intra-tumoral CD103+ cells compared to other tumor types and had gene profiles consistent with a previously described TRM signature. Despite this, their abundance was not associated with improved survival highlighting that the TRM population and function in cancers are more heterogenous than we currently appreciate. Further research is required to provide clarity on the subpopulations of TRMs observed in NPC and identify if they are potential prognostic or predictive biomarkers.

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