Abstract – half time review David Askmyr 2021-10-29

Title
Identification of antigen and antigen presenting capacity in oropharyngeal cancer.

Background
Dendritic cells (DCs) comprise key players in the immune response to cancer, as they are specialised in antigen presentation and harbour the capacity to activate Cytotoxic T-cells to eradicate cancer cells. Different subtypes of DCs present pattern recognition receptors (PRRs) that are needed to identify tumour antigen and to transform the DCs into a more mature phenotype. Our work focuses on characterizing DC subtypes in tonsillar squamous cell cancer, benign tonsils and benign neck lymph nodes, and to evaluate subset specific markers that could potentially be targeted in a therapeutic manner.

Material and methods
Tissue was collected from patients undergoing surgery, and flow cytometry was performed on fresh samples. DC subtypes were sorted and different PRRs and maturity markers were identified. RNA microarray was used to compare the genomic signature of tonsillar cancer and benign tonsil, with special attention to immunosuppression and antigen presenting capacity.

Result
In the first paper, we identified for the first time four subsets of DCs in tonsillar cancer: CD123+ plasmacytoid DCs, CD1c+, CD141+, and CD1c-CD141- myeloid DCs, with an increased number of DCs and an elevated mDC/pDC ratio in malignant tonsillar tissue compared to benign. RNA analysis revealed an immunosuppressive state in the DCs in malignant tonsils compared to benign, and DC subset specific markers were distinguished of which two, the PRRs CD206 and CD207 were confirmed at a protein level, selectively expressed on CD1c+ mDCs.

The second paper describe the same four DC subsets in benign tonsils and neck lymph nodes present at similar levels in both tissues, with a low grade of maturation. The expression of five PRRs (CD206, CD207, DC-SIGN, TLR2 and TLR4) and the chemokine receptor XCR1 indicated DC subset-specific receptor profiles.

Conclusion
Our studies describe an immunosuppressive micromilieu in tonsillar cancer, and identify potential targets if immunotherapy directed towards DCs in oropharyngeal cancer is considered. Tonsils and lymph nodes may be viewed as potential deposition sites for such therapy.

Publications