RESEARCH TOPIC CLI8

Association of pathological thymopoiesis in thymomas with autoimmunity

Research area

Medical Area

Clinical Unit name

Genitourinary Oncology and Rare Thoracic Tumors Unit, Humanitas Research Hospital, Rozzano

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Abstract

Thymomas are rare thymic epithelial tumors frequently associated with autoimmune diseases. Disruption of thymoma microenvironment is thought to impair central tolerance and thymopoiesis, enabling the escape of autoreactive T-cell clones. However, the mechanisms linking thymic dysfunction to systemic autoimmunity remain poorly defined as well as a comprehensive clinical and immunological characterization, posing significant challenges for patient quality of life and treatment.

This project aims to characterize immune cells isolated from peripheral blood and solid tissues with high-dimensional flow cytometry and single cell-RNA sequencing (sc-RNAseq). With the first approach we aim to provide a phenotypic characterization of the TET-infiltrating and circulating immune cells, whereas with the second approach we aim to provide a transcriptomic profile useful to investigate the functional state of the immune cells. This extensive characterization of circulating and tumor-infiltrating immune cells is aimed to disclose the pathogenic mechanisms of tumor escape from the immune-surveillance exerted by dendritic cells, T, B and NK cells.

Therefore, by correlating autoantibody profiles with histological subtypes and immune cell dynamics, this study seeks to advance understanding of thymoma-driven autoimmunity, with the final aim of improving patient stratification and oncological management.

Scientific references

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