FACTSHEET

Characterisation of a set of biological materials from PDCA patients

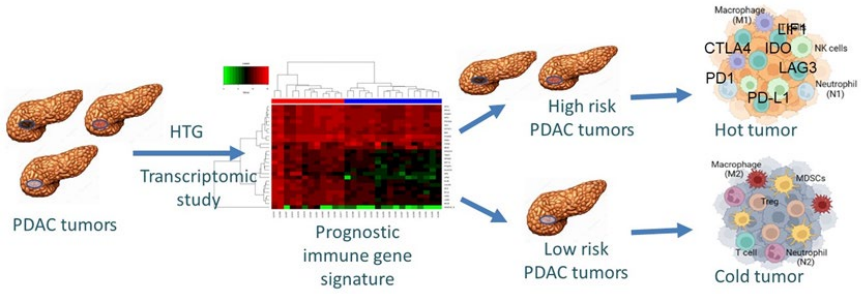
Abstract

As a biobank, Instituto Valenciano de Oncologia has collected, processed, stored, characterised and analysed biological materials patients affected by pancreatic ductal adenocarcinoma (PDAC): fresh frozen materials, formalin and fixed paraffin-embedded (FFPE) tissues, plasma and peripheral blood mononucleated cells.

Key points

- Establishment and characterisation of primary cultures from tumour samples of PDAC patients.
- Characterisation of the immune landscape of PDAC tumours: Transcriptomic study:
- Identification of two clusters of PDAC patients with different prognosis

The main task of the Instituto Valenciano de Oncologia (IVO) as a biobank has been to collect biological samples from 47 PDAC patients to make them available to the rest of the consortium's laboratories. In addition, these samples have been characterised at different levels in order to better understand the immune landscape of the PDAC patients and to provide information to the ULISES consortium for their work. The transcriptomic study in a retrospective cohort of PDAC patients revealed the existence of two groups of patients with different prognoses and with interesting immune targets that could be relevant in the development and improvement of therapeutic strategies, as well as in clinical decisions.



IVO also performed an **in silico transcriptomic approach to characterize tumour microenvironment.** A Meta-analysis of stroma-, and immune-related gene expression in the PDAC micro-environment was carried out as a complementary study to better understand PDAC tumours. 21 PDAC studies from the Gene Expression Omnibus and Array Express databases were selected, including 922 samples (320 controls and 602 cases). Differential gene enrichment analysis identified 1153 significant dysregulated genes in PDAC patients that contribute to a desmoplastic stroma and an immunosuppressive environment (the hallmarks of PDAC tumours). Through meta-analysis, IVO identified a series of gene signatures with survival prognostic value that may play a significant role in therapeutic decision-making for PDAC patients, including five genes not previously related to PDAC

survival. A free and friendly user web tool is available with detailed and interactive visualisation of the comprehensive meta-analysis results. This work has been published in Cancers (Basel). 2023 Jun; 15(11): 2887.

In conclusion, a collection a of biological specimens of PDAC have been created in the IVO biobank.
During characterisation of PDAC samples, a prognostic transcriptomic-based signature of 14 genes was defined and validated for PDCA. This signature clearly identifies two prognostic groups that could constitute the basis for tailored immunotherapy with specific IC inhibitors. LAG-3 is a promising target for immunotherapy in PDAC patients

References

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