Solving the Puzzle of Lung Cancer Complexity with Artificial Intelligence

I³LUNG

Funded by the European Union

Digital pathology predicts PD-L1 expression in metastatic NSCLC patients treated with immunotherapy

Lay Language Summary

IMPORTANT:

- The document contains the summary of a clinical trial, and its sole purpose is to communicate the results of it to the general public.

- This document is not intended to promote recruitment or provide medical advice.

- The results reflected in this document may contradict those of other trials.

- It is not recommended to make decisions based on the information collected in this document; it should always be consulted with a medical professional beforehand.

SPONSOR: MEDICA SCIENTIA INNOVATION RESEARCH S.L.

TUMOR TYPE: Non-small cell lung cancer

MEDICINE(S) STUDIED: Inmunotherapy

DATES OF STUDY: From 1st of June 2022 to May 2027

TITLE OF THIS STUDY: I3LUNG: Digital pathology predicts PD-L1 expression in metastatic NSCLC patients treated with immunotherapy

DATE OF THIS REPORT: July 2024

STUDY FUNDER: EUROPEAN COMMISSION

CLINICALTRIALS.GOV: NCT05537922

The content for this document was finalized on the 23rd of July of 2024. The information in this summary does not include additional information available after this date.

What was the purpose of this study?

Immunotherapy has revolutionized the treatment of advanced non-cell lung cancer. However, determining which patients will have a lasting benefit from immunotherapy has become a complicated task.

Among efforts to find biomarkers of response, the expression of a protein, PD-L1, is the only one currently in use.

The I3Lung project aims to use artifical intelligence to help analyze large amounts of clinical data to determine which patients are most likely to response to treatment.

What did researchers want to find out?

This part of the I3Lung project aimed to determine if morophological features of tumor samples are correlated with expression levels of PD-L1. To do this, researchers took digital slides of the a patient's tumor and their PD-L1 levels and used this information to develop and artificial intelligence based algorthim.

They created two different models: one to distinguish between patients with high PD-L1 expression (50%) and low/zero expression and the second model to distinguish between patients with postive and negative PD-L1 status. Data from four of the centers where used to generate the models and a fifth center was used to validate.

When and where did the study take place?

This study began in June 2022 and is scheduled to conclude in May 2027.

It has been conducted in Italy, Germany, Spain, Greece, the United States, and Israel.

What were the results of the study?

Of the 2,188 patients participating in the I3LUNG retrospective cohort, 474 patients had both digital pathology slides and PD-L1 status available for analysis.

The model that used high vs. low PD-L1 expression has a predictive ability of 70% whereas the positive vs. negative PD-L1 model had a predictive ability of 68%.

What were the main medical conclusions?

This is the largest series to date demonstrating that there is a correlation between tumor morphological features and PD-L1 expression in lung cancer. These insights could lead to advancements in personalized treatment approaches.

The use of this type of data is expected to improve the ability to determine the appropriate treatment for each patient. Consequently, it holds the promise of enhancing patient outcomes through more tailored strategies.

Where can I find more information?

Your doctor can help you understand more about this study and the results. Speak to your doctor about the treatment options available in your country. You should not make changes to your care based on the results of this or any single study. Keep taking your current treatment unless instructed by your doctor.

For more details, please visit the I3LUNG website:
www.i3lung.eu

The full scientific report of this study is available online at:
www.clinicaltrials.gov

About the I3LUNG Consortium

The I3LUNG project, coordinated by the Principal Investigator Dr. Arsela Prelaj, which began on June 1, 2022, and is scheduled to conclude in May 2027, **brings together a consortium of 16 partners from Europe, Israel, and the United States.** This international team of oncology experts is dedicated to improving the treatment of lung cancer. Funded by the European Union through the Horizon 2020 program, the project aims to develop AI-based tools to enhance the survival and quality of life of lung cancer patients while reducing unnecessary toxicities and treatment costs.

I3LUNG follows a dual approach: first, creating a platform with data from 2000 patients to validate AI models; and second, collecting multi-omics data from 200 patients with non-small cell lung cancer (NSCLC) to guide therapeutic decisions in immuno-oncology. Through these efforts, the project aims to provide advanced solutions that facilitate decision-making for both healthcare professionals and patients.

Some among the best European and International organizations are joining forces for this ambitious project: