Protein biomarker as potential tool for predicting lung cancer survival

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PD-1 protein expression predicts survival in resected adenocarcinomas of the lung. Credit: Medical University of Vienna

The biomarker PD-1, a protein, could potentially be used to predict survival or disease-free survival of lung cancer patients who have had the tumour surgically removed. This is substantiated by the results of a study conducted under the direction of the Comprehensive Cancer Center (CCC) of MedUni Vienna and Vienna General Hospital, together with MedUni Graz and the University of Novi Sad. The paper was presented at the 17th World Conference on Lung Cancer, which is currently taking place in Vienna (4 - 7 December).

In Austria, around 4,000 people develop lung cancer every year. Around three quarters of these cases involve so-called non-small cell lung cancer (or NSCLC). In turn, half of these, around 1,400 people, are diagnosed with adenocarcinomas, the commonest subtype of NSCLC. The earlier the disease is detected, the better the patient's chances of recovery. Essentially, the options for treatment are surgery, radiotherapy, chemotherapy (before and after surgery), a combination of these methods and, very recently, immunotherapy.

Scientists led by Martin Filipits, cancer researcher at MedUni Vienna's Institute of Cancer Research and member of CCC Vienna, has now been able to show that PD-1, a protein that occurs on the surface of the body's immune cells, could serve as a biomarker for predicting the survival of patients with adenocarcinomas. PD-1 is a so-called immune checkpoint protein. Immune checkpoints monitor the correct functioning of the immune response and check an ongoing immune reaction. That is important, as otherwise the immune response could overshoot and give rise to autoimmune diseases.

In the study, the researchers examined cancer cells and immune system cells from 159 patients. All of these patients had previously had the cancer resected and some of them had received chemotherapy afterwards. PD-1 was found on the immune cells of 45 percent of the patients and PD-L1 on the cancer cells in 37 percent of them. The investigation clearly showed that both survival and disease-free survival was longer in the patients in which PD-1 was found than in those where it was not. On the other hand, it made no difference to the prognosis whether PD-L1 was present on the cancer cells or not.

Filipits: "Our results indicate that PD-1 could serve as a biomarker for predicting the survival of patients with an operable adenocarcinoma of the lung. This finding still needs to be confirmed in further studies but it indicates the direction for further research."

Provided by Medical University of Vienna