A Novel Blood Marker for Prognostication and Treatment of Non-Small Cell Lung Cancer

Technology ID

PAS02-13

Category

Life Sciences/Therapeutics/Oncology

Authors

Harvey I. Pass, MD

View online page

Technology

Researchers at NYU Langone Health have demonstrate how IL-18 blood/plasma levels can be used to predict early Non-Small Cell Lung Cancer (NSCLC) recurrence. The scientists monitored blood samples from NSCLC patients and discovered that the levels of circulating IL-18 were elevated in stage I patients after R0 resection. Interestingly, IL-18 levels were associated with disease recurrence in all types of cancer progression (systemic, locoregional, second primary). These data suggest a more precise, cost-effective way to treat lung cancer patients based on their chances of disease progression.

Background

Lung cancer is one of the most common forms of malignancies in the U.S., comprising ~13% of all new cancers. NSCLC is the most abundant form of lung cancer. The five-year survival rate of lung cancer is only ~18%, but is much higher if the disease is diagnosed before it has spread to other organs. Given the high recurrence rate (~30%), the ability to prognosticate NSCLC patients as to the likelihood of disease recurrence is crucial. Currently, NSCLC disease progression prognosis is based on certain histological findings. However, these markers are not precise and could lead to over-medication, for example, in patients with low risks of recurrence.

IL-18 is a pro-inflammatory cytokine that has been shown to be involved in the development of emphysema and lung inflammation. IL-18 is also known to act as an angiogenesis inhibitor and a tumor suppressor and can increase production of IFN-γ by T-cells.

Applications

- This predictive method can be used to better focus the clinician's efforts and save large amounts of time and money associated with treating low-risk patients.
- High-risk patients (high levels of circulating IL-18) will be able to receive preventive care earlier in the disease progression, thereby improving their prognosis.
- The newly discovered association between IL-18 blood levels and lung cancer has therapeutic potentials in finding IL-18-related drug targets.

Advantages

- Easy and cost-effective way to predict whether disease progression is likely to happen in an early-stage NSCLC patient.
- More accurate than current methods of assessing cancer recurrence, which are mostly based on histological analyses. The prognostication is not dependent on the type of disease progression.
- Minimizes unnecessary cancer treatments (e.g., radiation) that can cause severe side effects, and enables caregivers to predict which patient is likely to regress and personalize their treatment regimen.

IP Status

Non-provisional patent application pending