A novel predictive diagnostic & management tool for chronic lymphocytic leukemia

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Technology

Prof. Shoshan-Barmatz and her team discovered novel biomarker patterns in chronic lymphocytic leukemia (CLL) patients assessing in diagnosis of CLL, assessing CLL severity and being a target for anticancer therapy. While CLL is currently not curable, there are available treatment options to manage the disease and improve quality of life for elderly patients. CLL is heterogenous disease in the manner that in some cases it progresses fast and require immediate intervention and in other cases the progress is slow and drug treatment can meanwhile be held to avoid the many side effects related to the anti-cancer treatment. Currently, it is advised to wait with treatment until disease is progressing or bothersome symptoms appear. However, ~30% of the cases the treatment is started too late, leading to harsh treatment and death.

Biomarker detection has become an integral part of both disease detection and treatment. The detection of biomarkers in early stages of the cancer disease, can drastically improving outcomes. Continued monitoring of biomarkers can tell us how a patient is responding to the treatment to allow fast intervention if needed. Here, Prof. Shoshan-Barmatz laboratory discovered pattern of biomarkers related to CLL. They conducted a comparative study of protein expression profiles in peripheral blood mononuclear cells of CLL patients and healthy individuals, utilizing specific antibodies, mass spectrometry, binary logistic regression analyses, and other bioinformatics tools. Utilizing LC-HR-MS/MS and immunoblotting techniques, the research focused on identifying several metabolism- and apoptosis-related proteins and other highly specific biomarkers that correlated with the occurrence of CLL. They identify biomarkers allowing for distinction between CLL patients in stable disease state and those to be transferred to anti-cancer treatments as early as **2-3 years before disease progression**. Currently, Prof. Shoshan-Barmatz and her colleagues developing microarray based on the biomarkers identify to allow fast, accurate and easy to use tool for CLL diagnosis and patient monitoring.

Application

A diagnostic tool based on novel biomarker pattern of chronic lymphocytic leukemia (CLL) that can be used for fast diagnosis, patient monitoring, disease management and monitoring anti-cancer drug treatment.

Advantages

- Platform
- Based on pattern of biomarkers and not single one
- Predication system – already 2-3 years before progression
- Early detection
- Personalized treatment
- Improved accuracy
- Non-invasive

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