Scientists look to immune system to handle follicular lymphoma

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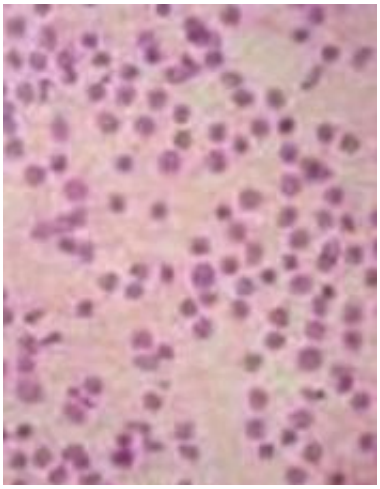

University of Rochester Medical Center researchers found more evidence that T cells going awry in the microenvironment – or the tissue immediately surrounding the tumor – may play a role in the biology of follicular lymphoma (FL).

This is important, as it plays into a promising future direction in cancer care to employ a patient's own immune system to fight back at the disease. The research is published online by the journal, *Blood*. It builds on previous work by this team at the James P. Wilmot Cancer Center at the UR, in which they proved that the drug Rituximab, a main treatment of FL, may in part work similarly to the flu vaccine by increasing a

person's cancer-fighting T-cells, in this case towards their lymphoma.

In the current study first author Shannon Hilchey, Ph.D., working in the laboratory of senior author Steven H. Bernstein, M.D, explored in detail how the immune environment around follicular lymphoma is different from a healthy immune environment.

They collaborated with Sally Quataert, Ph.D., and other researchers at the UR's David H. Smith Center for Vaccine Biology and Immunology and used a technique called flow cytometry to label and characterize many subsets of T cells in human tissue samples from malignant lymph nodes. The cancerous tissue was compared to the molecular environments of patient samples of non-malignant lymph nodes.

The scientists found that T cells are present in both malignant and healthy tissues, but in cancerous tissue they are skewed in different patterns. (T cells are a type of white blood cell that is vital to the function of the immune system.)

Furthermore, they discovered that despite a skewed distribution pattern, the cancer-ridden T cells behaved like normal cells -- once they were removed from the toxic microenvironment. This demonstrated that previously healthy T cells are apparently being shut down or suppressed within the confines of the tumor. If the suppressive force could be deactivated, scientists theorized, the immune system could get back to work fighting cancer.

"This is what you want to see," Hilchey said. "Since our study suggests that the bad actors are confined to the malignant environment, we hope to find a way to circumvent this activity and therefore make existing immune-therapy more effective."

The Wilmot group believes their work is among the first to apply such a

high level of detailed, single-cell analysis to the follicular lymphoma microenvironment.

Other scientists are using similar logic to find ways to treat other blood and bone marrow cancers, Hilchey said. Recently, for example, scientists at the University of Pennsylvania announced they were exploring a new experimental leukemia treatment by removing a patient's T cells, reprogramming them genetically to become cancer fighters, and then putting back the altered T cells into the patient.

"In the future is it not impossible to imagine a similar scenario for follicular lymphoma," Hilchey said. "If we can find ways to overcome the dangerous microenvironment in cancer, it not only introduces the possibility of new treatment, but it may allow current drugs to work better."

Follicular lymphoma is a slow-growing, common type of non-Hodgkin lymphoma that tends to be diagnosed in middle age or older. It is incurable, although people in advanced stages of FL can survive for several years with proper treatment.

More information: www.lymphoma.org/site/pp.asp?c … TKaOQLmK8E&b=6300155

Provided by University of Rochester Medical Center