# GRANZYME B PROTEIN MAY HELP ID CANCER PATIENTS WHO RESPOND TO IMMUNOTHERAPY TREATMENTS

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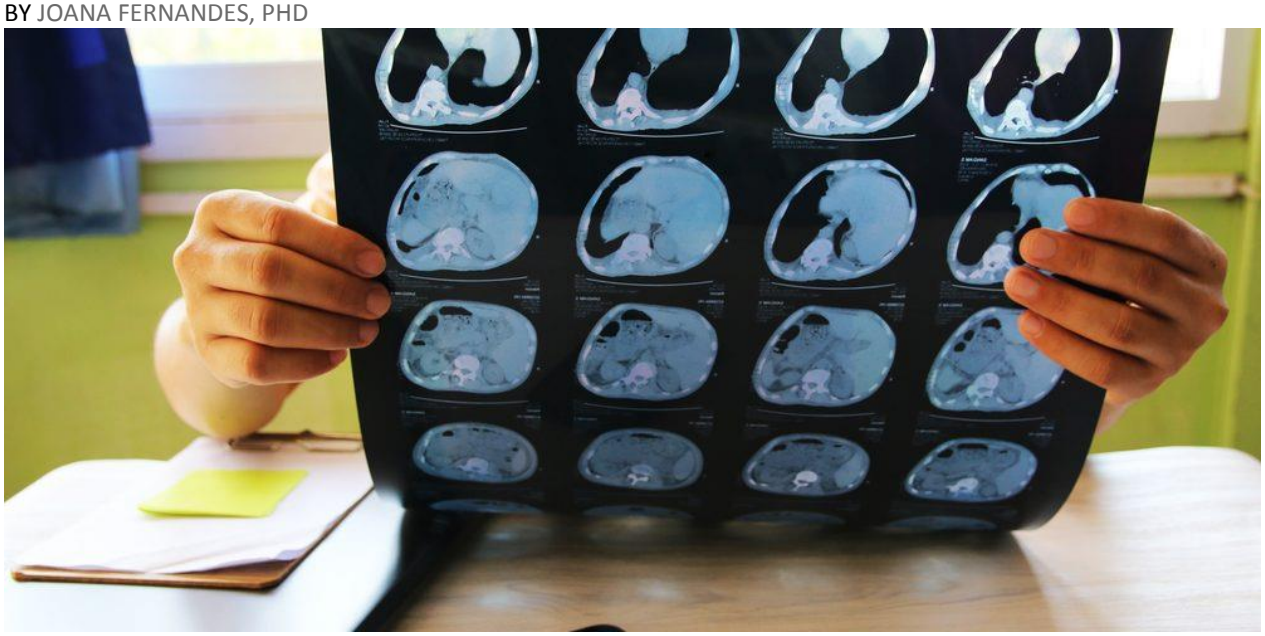

Researchers identified a new biomarker that may help them track cancer response to treatment using a noninvasive positron emission tomography (PET) imaging method.

**The new method measures granzyme B, a protein that is released by cells of the immune system to kill cancer cells, and allows researchers to know early which tumors respond to immunotherapy and which don't.**

The findings are in the study "Granzyme B PET Imaging as a Predictive Biomarker of Immunotherapy Response," and published in the journal *Cancer Research*.

In recent years, immunotherapy has been recognized as a powerful approach to fight off cancer. However, not all patients respond well to this type of therapy. So, knowing as soon as possible if a patient will benefit from immunotherapies should help reduce side effects and enable physicians to prescribe more effective treatments.

“The ability to differentiate early in the course of treatment patients who are likely to benefit from immunotherapy from those who will not can greatly improve individual patient care and help accelerate the development of new therapies,” Umar Mahmood, MD, PhD, the study’s senior author, said in a press release.

But knowing whether tumors are responding to treatment is hard to determine with traditional imaging techniques that measure tumor size, such as computerized tomography (CT) and magnetic resonance imaging (MRI) scans. Now researchers have developed a probe that marks granzyme B, which allows them to measure cancer cell death.

The probe is radioactive and, once bound to its target protein, allows researchers to know where in the body immune cells are producing granzyme B to kill cancer cells.

The team tested its method in mice with cancer, before and after therapy. They observed that tracking granzyme B had an “excellent predictive ability” in distinguishing mice that responded to immunotherapy, and also those that didn’t.

They also used biopsy samples from melanoma patients on immunotherapy. Again, a marked difference in granzyme B levels was observed between samples from responders and non-responders.

“In our study, we found a marker that was highly predictive of response to immunotherapy at a very early time after starting treatment, and we were able to design an imaging probe to detect this marker and accurately predict response non-invasively,” Mahmood said.

“These findings could have a significant impact on drug development, as different combinations could be imaged at very early time points in patients and the levels of tumor granzyme B used to compare treatments and rank effectiveness,” the researchers added. “Further, therapeutics that achieve high levels of granzyme B release can be advanced faster and those leading to low granzyme B release can be altered or eliminated.”