



Blood Test Shows Promise for Detecting Testicular Cancer When Standard Markers Miss

Testicular cancer most often affects adolescents and young adults, and it is highly treatable, especially when found early.

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Rochester, Minn. — [Mayo Clinic](#) researchers have developed a blood-based method that may help detect germ cell tumors, the most common type of testicular cancer, including cases that do not show up on standard blood tests, according to a [study](#) published in Nature Communications.

[Testicular cancer](#) most often affects adolescents and young adults, and it is highly treatable, especially when found early. However, diagnosis can be challenging when tumors do not produce enough of the usual blood-based substances — called tumor markers — to show up on standard tests, which can make diagnosis harder.

To help solve this, researchers used a method that analyzes thousands of immune system signals in the blood at once. Using this approach, they developed a new test called GCT-iSIGN. In a study of 427 blood samples, the test identified 93% of individuals who had germ cell tumors and correctly ruled out cancer in 99% of people who did not. The test also detected 23 of 24 cases that standard blood tests missed. This gives doctors another way to find these cancers, especially in younger patients.

Researchers also developed a second test, called Sem-iSIGN, designed to distinguish between two main types of testicular cancer. This distinction matters because each type can require a different treatment approach.

The findings build on earlier work by the same research teams using immune profiling to identify biomarkers linked to paraneoplastic neurologic syndrome associated with testicular cancer, including KLHL11 IgG, which was described previously in The New England Journal of Medicine.

“When standard blood markers are negative, diagnosis and treatment planning can be delayed,” says [Divyanshu Dubey, MBBS](#), senior and corresponding author of the study and a professor of laboratory medicine and pathology and a professor of neurology at Mayo Clinic. “Our findings show a promising path toward a more sensitive blood test approach, but additional studies are needed

before it can be used routinely in patient care.”

Co-first authors are M. Bakri Hammami, MD, and Andrew M. Knight, PhD. Funding included support from the Department of Defense, as well as institutional and federal sources.

Mayo Clinic has a financial interest in the technology referenced in this news release. Any revenue received will be used to support Mayo Clinic’s not-for-profit mission in patient care, education and research.

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