

Blood test may help determine if nodules detected by CT scans are lung cancer

July 13 2022



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Annual screenings of patients at high risk for lung cancer can catch tumors early and improve a patient's long-term prognosis. However, low-dose computer tomography (LDCT) has a high false-positive rate that can lead to unnecessary biopsies. University of Missouri School of Medicine researchers have found a biomarker in the blood that can complement LDCT by distinguishing non-small-cell lung cancer

(NSCLC) from benign nodules without an invasive biopsy.

"It's a [simple blood test](#) that checks for two things: circulating [tumor cells](#) (CTCs) that detach from a primary tumor and circulate in the blood, and tumor-macrophage fusion (TMF) cells that have been determined to be highly prognostic for poor survival after lung cancer surgery," said study author Jussuf Kaifi, MD, a cancer surgeon at MU Health Care and an assistant professor of surgery at the MU School of Medicine.

Kaifi's team collected [blood samples](#) from 221 patients, including 90 NSCLC patients, 74 high-risk screening patients with either no or benign nodules and 37 patients determined to have suspicious nodules detected by LDCT. Researchers also tested a [control group](#) of 20 people who had never smoked who were at low risk for [lung cancer](#).

"When we collected the samples from the patients in our study, we found CTCs in all 90 patients with NSCLC, none of the patients in the control group, and in 29 of 37 patients with suspicious nodules," Kaifi said. "We also found TMF cells in some NSCLC patients, and those were not present in patients with benign nodules."

However, Kaifi's team found that the rarity of TMF cells may make them unsuitable biomarkers for early cancer detection. Only 48% of patients with NSCLC tested positive for giant TMF cells. The next step is to conduct a prospective, large-scale, multicenter clinical trial to validate the role cellular liquid biomarkers play in improving diagnostic accuracy.

"This study demonstrated that integrating cellular liquid biomarkers, CTCs and TMF cells into standardized LDCT screening protocols can improve accuracy of NSCLC detection in high-risk patients who have nodules detected by LDCT," Kaifi said. "This is a promising finding that

can potentially improve the screening process, improve cancer outcomes and reduce unnecessary interventions and associated morbidities."

The study was published in *JCO Precision Oncology*.

More information: Yariswamy Manjunath et al, Circulating Tumor-Macrophage Fusion Cells and Circulating Tumor Cells Complement Non-Small-Cell Lung Cancer Screening in Patients With Suspicious Lung-RADS 4 Nodules, *JCO Precision Oncology* (2022). [DOI: 10.1200/PO.21.00378](https://doi.org/10.1200/PO.21.00378)

Provided by University of Missouri

Citation: Blood test may help determine if nodules detected by CT scans are lung cancer (2022, July 13) retrieved 4 May 2024 from <https://medicalxpress.com/news/2022-07-blood-nodules-ct-scans-lung.html>

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