Trio of biomarkers may help identify kidney cancer in early stages

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- Biomarkers could help catch otherwise hard-to-detect cancer.
- Three-marker assay has high sensitivity and specificity.
- Researchers are seeking FDA approval.

A new immunoassay that tests for the presence of three biomarkers appears to be a valid screening method for the early detection of malignant kidney cancer, according to data published in *Cancer Epidemiology, Biomarkers & Prevention*, a journal of the American Association for Cancer Research.

"Renal cell carcinoma, a malignant tumor arising from the kidney, is one of the most difficult forms of cancer to detect and treat properly because it remains silent until disseminating to other organs," said Nam Hoon Cho, M.D., of the Department of Pathology at Yonsei University Health System in Seoul, Korea. "Furthermore, because imaging, which is high-cost, is seldom performed without any specific reasons, developing a blood-tumor biomarker is a great chance to detect the silent killer."

The new immunoassay developed by Cho and colleagues from Genomine Inc. measured the levels of three potential biomarkers for kidney cancer: nicotinamide N-methyltransferase (NNMT), L-plastin (LCP1) and nonmetastatic cells 1 protein (NM23A).

Using this assay, the researchers measured concentrations of NNMT, LCP1 and NM23A in 189 plasma samples from 102 healthy controls and patients with benign tumors and 87 patients with kidney cancer. Plasma levels indicated that all three biomarkers were highly elevated in patients with kidney cancer. For example, the median level of NNMT concentration in healthy controls was 68 pg/mL compared with 420 pg/mL for patients with kidney cancer.

Next, the researchers tested the ability of the immunoassay to distinguish plasma samples from healthy controls and patients with kidney cancer using the same 189 plasma samples already tested. The results indicated that the three-marker assay was highly accurate. When it correctly identified 90 percent of the samples from healthy controls, it also correctly identified 94.4 percent of the samples from patients with kidney cancer.

To validate the accuracy of the test, the researchers blind tested an additional 100 plasma samples from 73 healthy controls and 27 patients with kidney cancer. In this analysis, 67 of the samples from the 73 healthy controls and all of the samples from patients with kidney cancer were classified correctly.

"If this biomarker is truly valid and accurate to detect renal cell carcinoma, a number of patients with renal cell carcinoma could potentially be saved through early diagnosis," Cho said. C

ho and colleagues hope that this biomarker will soon be commercially available. They are currently working toward approval by the U.S. Food and Drug Administration.

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