

Certain genetic variants may put bladder cancer patients at increased risk of recurrence

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In the Western world, bladder cancer is the fourth most common cancer in men and the eighth most common in women, with many patients experiencing recurrence after treatment. A new study published in *BJU International* indicates that inheriting certain DNA sequences can affect a patient's prognosis. The findings may help physicians identify sub-groups of bladder cancer patients who should receive intensive treatment and monitoring.

Nearly half of [patients](#) diagnosed with bladder cancer experience tumor recurrences, but it is difficult to predict which patients are at risk. Angeline Andrew, PhD, of the Dartmouth-Hitchcock Norris Cotton Cancer Center in Lebanon, New Hampshire and her colleagues analyzed the genes of 563 patients to identify genetic variants that modify time to bladder cancer recurrence and patient survival. The investigators isolated DNA from immune cells circulating in the blood, and they examined genes involved in major biological processes linked to cancer: cell death, proliferation, DNA repair, hormone regulation, immune surveillance, and cellular metabolism. After diagnosis, patients were followed over time to ascertain recurrence and survival status. Patients were followed for a median of 5.4 years, and half of patients experienced at least one recurrence.

The team found that patients with variants in the aldehyde dehydrogenase 2 (ALDH2) gene were likely to experience bladder

cancer recurrence shortly after treatment. This gene encodes an enzyme involved in alcohol metabolism. Time to recurrence was also shorter for patients who had a variant in the vascular cellular adhesion molecule 1 (VCAM1) gene and were treated with immunotherapy. VCAM1 encodes a glycoprotein involved in the development of lymphoid tissues. Patients who had non-invasive tumors and a variant in the DNA repair gene XRCC4 tended to live longer than patients who did not have the variant.

The researchers noted that the novel associations between genetic variants and bladder cancer recurrence uncovered in this study merit future investigation. "The genetic markers that we found could potentially be useful for individually tailoring surveillance and treatment of [bladder cancer](#) patients," said Dr. Andrew.

More information: "Genetic polymorphisms modify bladder cancer recurrence and survival in a U.S. population-based prognostic study." Angeline S. Andrew, Jiang Gui, Ting Hu, Asaf Wyszynski, Carmen J. Marsit, Karl T. Kelsey, Alan R. Schned, Sam A. Tanyos, Eben M. Pendleton, Rebecca M. Ekstrom, Zhongze Li, Michael S. Zens, Mark Borsuk, Jason H. Moore, and Margaret R. Karagas. BJU International; Published Online: March 26th, 2014 [DOI: 10.1111/bju.12641](https://doi.org/10.1111/bju.12641)

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