

Study reveals cancer immunotherapy patients at most risk of life-threatening side effects

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Many patients with cancer receive immune checkpoint inhibitors that strengthen their immune response against tumor cells. While the medications can be life-saving, they can also cause potentially life-threatening side effects in internal organs. This double-edged sword makes it challenging for clinicians to decide who should be considered candidates for treatment. A new analysis led by researchers at

Massachusetts General Hospital (MGH) indicates which patients are at elevated risk of side effects severe enough to require hospitalization. The findings are published in the *Journal for ImmunoTherapy of Cancer*.

"Understanding the [risk factors](#) for predicting high-grade toxicities will help in appropriately selecting patients most likely to tolerate immune checkpoint inhibitor therapy," says co-senior author Yevgeniy R. Semenov, MD, an investigator in the Department of Dermatology at MGH. "It will also help to identify higher risk patients who should be carefully monitored if they initiate this therapy."

To this end, Semenov and his colleagues analyzed information from a national health insurance claims database, identifying 14,378 patients with cancer who received [immune checkpoint inhibitors](#) in the United States between 2011 and 2019. The team found that 3.5% of patients who received immune checkpoint inhibitors experienced side effects that required patients to be hospitalized and to receive immunosuppression treatments (to counteract the effects of the immune checkpoint inhibitors).

"We found that younger age, melanoma, and kidney cancer were each predictive of the development of severe immunotherapy toxicities," says Semenov. Patients also faced a higher risk if they received multiple immune [checkpoint](#) inhibitors, rather than just one type.

"This study provides the foundation for studying severe immunotherapy toxicities using a Big Data analytic framework, which will be necessary when understanding the impact of these life-saving medications across diverse populations," says Semenov. "Also, it is the first step in developing robust clinical risk prediction models to identify patients at highest risk for the development of life-threatening treatment complications."

More information: Mark Kalinich et al, Prediction of severe immune-related adverse events requiring hospital admission in patients on immune checkpoint inhibitors: study of a population level insurance claims database from the USA, *Journal for ImmunoTherapy of Cancer* (2021). [DOI: 10.1136/jitc-2020-001935](https://doi.org/10.1136/jitc-2020-001935)

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