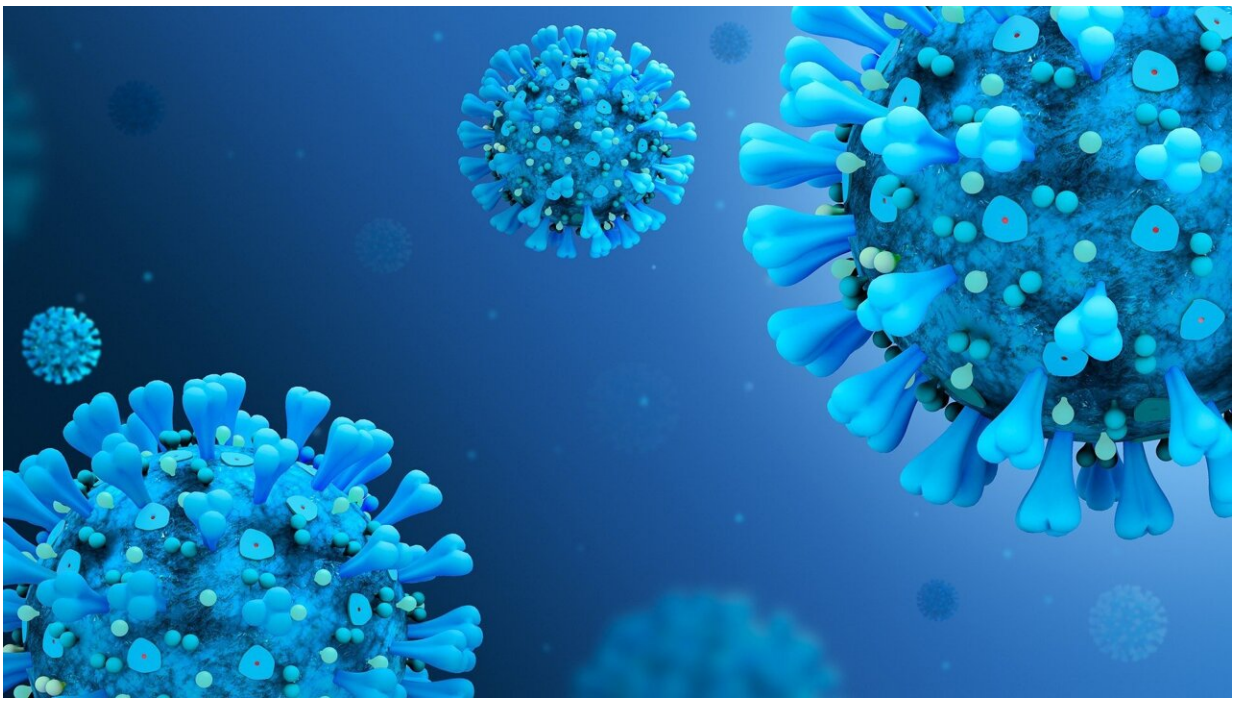
Q&A: Patterns and prognostications in immune-related adverse events from immunotherapy treatment

July 16 2024, by Liz Murphy



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Yevgeniy Semenov, MD, MA, a physician-investigator in the Mass General Department of Dermatology and an Assistant Professor of Dermatology at Harvard Medical School, and Guihong Wan, Ph.D., an Instructor of Dermatology at Massachusetts General Hospital and

Harvard Medical School, are the senior author and the first author, respectively, of a new study in *The Lancet Oncology*.

The study is titled "Multi-Organ Immune-Related Adverse Events from Immune Checkpoint Inhibitors and their Downstream Implications: A Retrospective Multicohort Study."

Here, they answer questions about their latest research.

What question were you investigating with this study?

What are the patterns and prognostic implications of immune-related adverse events in cancer patients being treated with immune checkpoint inhibitors?

What approach did you use?

In this retrospective study, we included 13,000 individuals who received immune checkpoint inhibitor therapy between 2015 and 2021 from Massachusetts General Hospital, Brigham and Women's Hospital, and Dana-Farber Cancer Institute. We validated our findings using the independent US population-based TriNetX cohort of 26,000 matched patients.

What did you find?

Our approach comprehensively evaluated occurrence patterns of immune-related adverse events, from those affecting single organs to those involving two or more organs.

In pairwise analyses, we observed that most immune-related adverse events tend to co-occur. For example, ocular immune-related adverse

events consistently co-occurred with cutaneous and gastrointestinal immune-related adverse events, a pattern that reflects the biological similarity of the ocular, cutaneous, and gastrointestinal mucosa.

Furthermore, we identified seven patient clusters demonstrating different development patterns of immune-related adverse events and found that, in comparison with patients without immune-related adverse events, patient clusters dominated by endocrine and cutaneous immune-related adverse events were associated with improved survival, while those dominated by respiratory and neurologic immune-related adverse events were associated with worse survival outcomes. Our analyses reached similar conclusions across both cohorts, demonstrating their robustness.

These findings validate previous studies identifying improved overall survival among recipients of immune checkpoint inhibitors who experience cutaneous and endocrine immune-related adverse events.

What are the clinical implications and next steps?

Our findings provide a roadmap for clinicians to identify the immune-related adverse event cluster to which a patient belongs early in the treatment course. This creates an opportunity to offer valuable prognostic insights into the patient's treatment response through the lens of immune-related adverse events development, enabling clinicians to counsel patients to continue therapy if their cluster is associated with favorable outcomes or to consider alternative treatments if it is not.

These findings also contribute to a deeper understanding of the potential biological mechanisms underlying immune-related adverse events across various organs.

More information: Guihong Wan et al, Multi-organ immune-related

adverse events from immune checkpoint inhibitors and their downstream implications: a retrospective multicohort study, *The Lancet Oncology* (2024). DOI: 10.1016/S1470-2045(24)00278-X