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Overlooking cardiac dysfunction triggered by immune checkpoint inhibitors: Caution, trespassers will be ventilated

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Abstract

Immune-related cardiac adverse events can ensue following immunotherapies.

Immune checkpoint blockade is a relatively novel strategy in cancer treatment that acts via enhancing a patient's immune system. Unfortunately, by increasing immune responsiveness, checkpoint inhibitors can also lead to serious immune-related side effects. Such adverse effects generally involve the gastrointestinal tract, the skin, and endocrine glands, but potentially all organs can be affected. Less common side effects, including cardiac or musculoskeletal inflammation and myasthenia gravis, may go undiagnosed.

In order to assess the association of immune checkpoint blockade with the onset of myocarditis, which had been previously described by anecdotal studies and case reports, Mahmood and collaborators analyzed institutional registries from eight different medical centers in the United States. They found that 1.14% of cancer patients receiving immunotherapies developed myocarditis, which occurred somewhat early—median time of clinical onset was only 34 days after starting checkpoint blockade treatments—and was observed after the administration of both combined agents and monotherapies. Major adverse cardiac events (MACE, defined as the composite of cardiovascular death, cardiogenic shock, cardiac arrest, and hemodynamically significant complete heart block) occurred in approximately half of the patients that developed myocarditis. Importantly, the elevation of serum troponin level, a biomarker of cardiac injury, during treatment with checkpoint inhibitors, was the best predictor of MACE, superior to electro- and echocardiography.

The present findings have translational potential, especially evident in having identified troponin as a fundamental—and reasonably easily obtainable—predictor of MACE. Indeed, high serum troponin may represent a useful indicator for physicians to obtain a prompt diagnosis of otherwise overlooked immune-mediated cardiac dysfunction and establish a proper treatment.

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