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Combined radiotherapy and immunotherapy improve efficacy in a murine lung cancer model

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Radiation therapy is commonly used to reduce tumor size and improve symptoms of non-small cell lung cancer. While initially beneficial, many patients will eventually relapse with metastatic tumors. Last year, two immunotherapies that improve anti-tumor T cell responses by inhibiting the PD-1 pathway were approved for non-small cell lung carcinoma. However, it is not yet known if combining immunotherapy with traditional radiation therapy will improve outcome for lung cancer patients.

In this issue of *JCI Insight*, researchers from the NYU Langone Medical Center and the Dana Farber Cancer Institute used a genetically engineered mouse model of non-small cell lung cancer to examine the efficacy of treatment with radiotherapy and a PD-1 inhibitory antibody. The research group, led by Alec Kimmelman and Kwok-Kin Wong, showed that combination therapy improved survival when used as an initial therapeutic approach.

However, using anti-PD1 therapy for tumors that had relapsed after radiation therapy showed no benefits. In addition, tumors that lost expression of the tumor suppressor Stk11/Lkb1 (serine/threonine kinase 11/liver kinase B1), which is mutated in approximately 20% of non-small cell lung cancers, did not benefit from combination therapy.

These murine lung cancer model findings may help guide future

translational studies examining combination radiotherapy and checkpoint blockade.

More information: Grit S. Herter-Sprie et al, Synergy of radiotherapy and PD-1 blockade in Kras-mutant lung cancer, *JCI Insight* (2016). DOI: 10.1172/jci.insight.87415

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