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May 16th, 1:45 PM

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Yasmin-Karim S, Moreau M, Ngwa W. (2017). Enhancement of the Abscopal Effect in Radiotherapy by In-situ Delivered CD40 Antibody: Pancreatic Adenocarcinoma Model. UMass Center for Clinical and Translational Science Research Retreat. Retrieved from https://escholarship.umassmed.edu/cts_retreat/2017/posters/91

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ENHANCEMENT OF THE ABCOPAL EFFECT IN RADIOTHERAPY BY IN-SITU DELIVERED CD40 ANTIBODY: PANCREATIC ADENOCARCINOMA MODEL

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Metastasis is the cause of death in most cancers. It has been observed by Mole and others that radiotherapy at one site may lead to regression of metastatic cancer at other sites, which were not irradiated, this phenomenon is called 'abscopal' effect. Unfortunately, this regression is not predictable.

Few studies observed some enhancement by systemic application of immunoadjuvants, which also has limited application because of generalized adverse effect. The purpose of this study is to evaluate the enhancing and abscopal effect of radiotherapy by in-situ delivered anti-CD40 in the treatment of pancreatic cancer.

A syngeneic mouse model of pancreatic adenocarcinoma was generated in C57/BL6 background mouse using Panc02 cell lines in both flanks. The palpable sized tumors of left flanks were treated as four different randomized cohorts: control with no treatment, direct treatment with 5 Gy of radiation, intra tumor treatment with CD40 antibody, and in combination. Tumor growth was measured on both sides.

Result shows that in-situ application of CD40 antibody significantly enhances the effect of radiotherapy. Reduction of tumor volume was observed in both sides. The treated tumors (left) show average of 75% reduction of tumor volume by combination treatment compare to 32% reduction by radiation alone. On the untreated side (right), it was 86% reduction with combination treatment compare to 20% reduction with the radiation alone which may be reminiscent of an abscopal effect. This result shows potential for translational studies to significantly extend the use of radiotherapy for the treatment of both localized and metastatic cancers.

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