POSTER PRESENTATION

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Image guided cryoablation of cancer with intra-tumoral injection of anti-CTLA-4 and PD-1 immune check-point inhibitors

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Background

Image guided cryoablation of cancer destroys tumor tissue and can activate tumor-specific T cells by increasing

the presentation of tumor antigens and causing the release of “Danger signals” to stimulate the immune system. However, the development of a systemic anti-cancer

Image above demonstrates FDG PET/CT with abnormal uptake in two right upper lobe nodules.

Image above demonstrates FDG PET/CT with abnormal uptake in right supra-hilar lymph nodes, right upper lobe nodule and right axillary lymph node.

Image above demonstrates FDG PET/CT with abnormal uptake in bilateral infra-hilar and right peri-aortic lymph nodes.

Figure 1

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Image above is a CT scan performed during the ablation procedure demonstrating ablation needle with a right upper lobe lesion.

The image above demonstrates a FDG PET/CT scan performed 2 months after treatment with minimal peripheral FDG uptake of the ablated tumor site.

Figure 2

The above image is a FDG PET/CT performed 2 months after treatment showing resolution of infra-hilar adenopathy, with minimal residual uptake in peri-aortic adenopathy.

Figure 3

immune response may be restrained by immune check-point inhibitors. In recent years, the U.S. Food and Drug Administration–approved antibody drug ipilumimab, nivolumab and pembrolizumab as inhibitors of CTLA-4

CT scan 7 weeks after procedure demonstrating resolution of lung nodules.

Figure 8

CT scan of the lumbar spine 7 weeks after treatment demonstrating stable lumbar mass.

Figure 9

and PD-1 blockade, by direct injection into the ablated tumor, will enhance anti-tumor immunity and rejection of tumor metastases.

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and PD-1. By blocking these immune check-point receptors, these antibodies can promote tumor rejection, but their full application has yet to be fully determined.

Methods

In our human case studies, we offer a proof-of-concept in multiple tumor types that intra-tumoral CTLA-4 and PD-1 blockade combined with cryoablation of a primary tumor can cause regression of secondary tumors at a distant site.

Results

From past clinical experience, we know that secondary tumors are unlikely to be affected by cryoablation alone, the combination treatment was sufficient to cause complete cancer regression and tumor rejection. Cryoablation is currently used to treat a targeted tumor, our results suggest that combination therapy with CTLA-4

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