A Study to Evaluate Immunological Response to PD-1 Inhibition in Squamous Cell Carcinoma of the Head and Neck (SCCHN) using novel PET Imaging with [18F]Ara-G

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ABSTRACT

Background: Immune checkpoint blockade has demonstrated remarkable responses in a subset of patients with head and neck squamous cell carcinoma (HNSCC). However, the response rate is only ~20% or less for HNSCC. We hypothesize that characterization of these changes in the immune system and changes in [18F]F-AraG accumulation in the tumor tissue correlates with an anti-PD-1 response.

METHODS

PBMCs were isolated from peripheral blood samples of patients treated with anti-PD-1 therapy and then activated with 

RESULTS

Hypothesis: We hypothesize that characterization of these changes in the immune system and changes in [18F]F-AraG accumulation in the tumor tissue correlates with an anti-PD-1 response.

BACKGROUND

While immune checkpoint blockade has demonstrated remarkable responses in a subset of patients with cancer, the need for noninvasive measures of predicting response to treatment is greatly needed. This project assesses the ability of an imaging agent, [18F] F-AraG, to characterize the change in the immune system and changes in [18F]F-AraG accumulation in the tumor tissue correlates with an anti-PD-1 response.

OBJECTIVES

1. To collect adequate pre and post immunotherapy blood and tissue samples to perform the above analysis.
2. To assess whether an "F"-labeled metabolite analogue that accumulates in cells of information can be used for noninvasive imaging and assessment of T cell activation and expansion in the tumor microenvironment.

CONCLUSIONS

We have consented 11 patients on the study, with nine patients enrolled on the study blood and biopsy study, and five patients enrolled in the imaging study. All nine patients completed blood and biopsy collection of the study, and three patients were able to get the biopsy post-immunotherapy. For the 3 patients that we were able to get biopsy post-immunotherapy, we observed a correlation in the change in total SUV and change in the CD8+ T cells compared to naive T cells.

REFERENCES


METHODS

PET Tracer Molecule: Molecular imaging of immune cell activation post treatment. This study (1) evaluates correlations between clinical response, [18F] F-AraG imaging changes, and tumor-infiltrating CD8+ T-cell activation.

We hypothesize that characterization of these changes in the immune system and changes in [18F]F-AraG uptake within the tumor may allow us to better predict: 1. Which patients will go on to benefit from PD-1 therapy. 2. Which combinations of immunotherapy will be most beneficial for a particular patient.

PATIENTS

Patients in the surgical cohort are administered a single dose of PD-1 ab in a non-adjacent setting. In the six patients we have enrolled in the surgical cohort, we have seen 2 courses of possibly needed grade 3 events.

SAFETY

In the Surgical Cohort: 4/6 patients were enrolled in the imaging portion of study, with 3 patients enrolled in the imaging portion of study. We were unable to get matched sets for [18F]F-AraG PET imaging for 2 patients, due to mismatched sets of the patient. For the patients that we were able to get matched sets, we did not see any PET imaging changes, and thus in their information is not included.

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