CASE STUDY

PRECISION FOR MEDICINE
ONCOLOGY AND RARE DISEASE

Use of Flow Cytometry Data to Achieve Optimal Dose

A phase I immunotherapy trial

Situation

Precision for Medicine, Oncology and Rare Disease is currently managing a two-part, phase I study that is looking at safety and efficacy of a novel agent: a recombinant, humanized monoclonal antibody targeting a specific receptor, resulting in potent antibody-dependent cellular cytotoxicity. Part 1 of the study is a dose escalation design, where we look at escalating doses of the novel agent in combination with varying levels of different immunotherapies to help augment the level of antitumor activity of the immune response to the tumor cells. In typical dose escalation studies, patients are treated with escalating doses of the study drug (in various combinations) until a certain level of unacceptable toxicities (adverse events) that are consistently seen in the treated patients is reached. The goal of these studies is to find the highest tolerated and safe dose, with a balanced amount of adverse risk.

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Challenges

Throughout the trial, the team collected samples to evaluate tumor biomarker expression and activity, as well as the degree and type of immune infiltration by immunohistochemistry. However, until the final cohort was reached without demonstration of adverse events, these were not analyzed in conjunction with the clinical data. Upon completion of the final planned dosing cohort, the question remained, “did we achieve the final ‘optimal’ dose for more robust evaluation of efficacy, or were further refinements to dosing needed?” Without clinical evidence, it was necessary to rely on biomarker and immunohistochemistry data for insights.

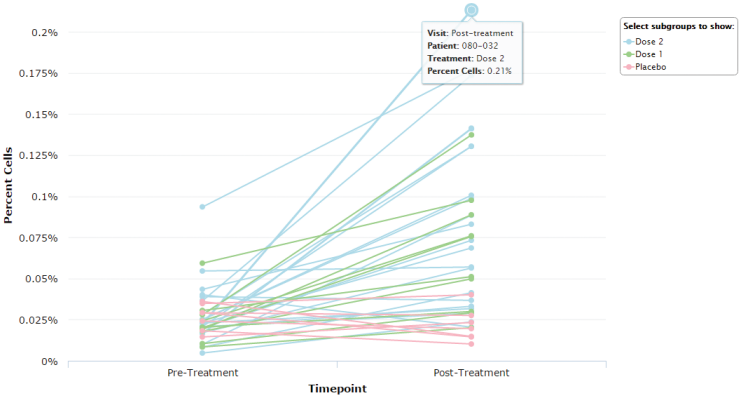
Solution

At this point, Precision performed data analytics on the flow cytometry data. This service provided expanded information on the impact of the study drug, with a focus on the response of the T-cells.

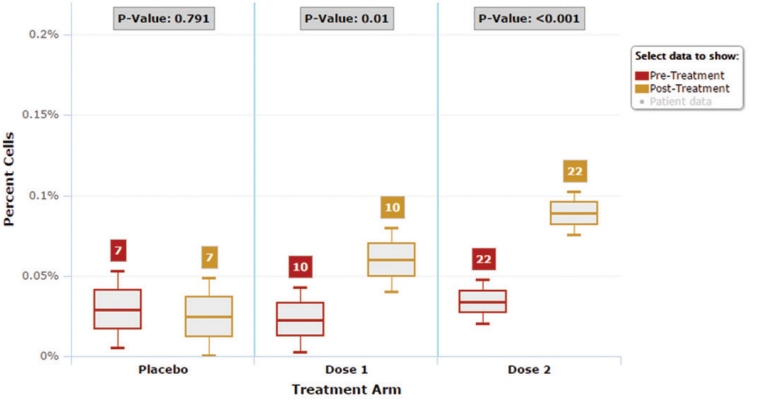
Within 1 week of initiating this analysis, Precision was able to provide initial results of the analysis. Enrollment was placed on hold until proper insights could be provided; therefore, the speed at which these analytics were provided was critical and the quick turnaround time was highly appreciated and impactful.

The Precision team was able to share online data tools to the Sponsor, allowing for interactive views of displays of all biomarker and flow cytometry data — on both a cumulative level and an individual level. A sample display is provided above.

T-Reg Cell Populations-Sample Display
% Lymphocyte Per Patient



T-Reg Cell Populations-Sample Display
% Lymphoctye Averaged by Treatment Arm and Timepoint



Results

As a result of the analytics provided by the integrated Precision solution, the clinical team was able to quickly realize that we may not have reached the right dose to ensure maximized response; further dosing adjustments are currently being pursued to optimize the end biologic result.

This study is just one example of the power of our integrated trial execution and biomarker solutions, as well as our ability to help companies with novel compounds achieve clinical trial success and, ultimately, to more quickly bring effective therapies to the market.

For more information about our clinical trial solutions, please contact us at info-ord@precisionformedicine.com, or visit precisionformedicine.com/ord.

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