Comparison of SUV and RECIST responses in cancers treated with SM-88.

Authors:

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Background:

Recent examples, such as iRECIST for checkpoint inhibitors, have demonstrated that response criteria other than RECIST 1.1 may be more appropriate for some therapeutic mechanisms. SM-88 is a relatively non-toxic novel combination of dysfunctional tyrosine and repurposed agents (CYP3a4 inducer, mTOR inhibitor, plus oxidative stress catalyst) with potential efficacy in multiple cancer types. Because SM-88's mechanism of action is based on metabolism and the Warburg Effect, standardized uptake values (SUVs) with PET imaging may provide an earlier indication of therapeutic response.

Methods:

Retrospective chart review identifying patients who had undergone multiple FDG-PET CT exams in proximity to or during treatment with SM-88 (aka SMK). All subjects (n=107) received po SM-88 5 days/week. Combination therapy, with other anti-neoplastics including parenteral SM-88, was permitted amongst the compassionate use cases. Of the 11 evaluable patients, response to therapy was evaluated according to change in tumor size (RECIST 1.1) and SUVmax.

Results:

Nine patients received SM-88 monotherapy and 2 were combination therapy. Cancers included: breast (n=7), Ewing's Sarcoma (n=2), thyroid (n=1), and renal (n=1). SM-88 BORRs were 4 CRs, 6 PRs, and 1 SDs (BORR not based exclusively upon scans herein). Mean time between baseline scan and initiation of therapy was less than 1 wk (-9-19) and 18 wks (1-66) for the follow-up scan. At 2nd scan the range in RECIST-based diameter changes was -73% to +13% (-1% median) in comparison to a reduction

in SUV of 23% to 100% (48% median). All subjects evaluated had a greater % decrease in SUV than RECIST measurements. 7/11 subjects (64%) had a >30% reduction in SUVmax while 2/11 (18%) had RECIST diameter change>30% (X2 p<.05). SUVmax at 2nd scan showing ≥30% reduction had a 85.7% positive predictive value for best overall response of either a PR or CR RECIST response. Three of the patients that eventually achieved a RECIST CR had a greater % initial drop in SUV than RECIST change.

Conclusions:

PET-based SUV may provide an early indication of therapeutic activity for metabolically-based cancer treatments. Larger studies of the correlation are required to determine relevance in clinical decision making.