Conclusions An early increase in HPV-16 specific T cells (after a single administration of bintrafusp alfa, prior to restaging) was associated with clinical activity in patients with HPV-related cancers undergoing bintrafusp alfa therapy. This evidence, and the pre-clinical finding of enhanced antitumor activity observed when combining bintrafusp alfa with an HPV-16 targeted vaccine and an immunostimulatory cytokine have provided the rationale for an ongoing study evaluating this combination in patients with advanced HPV-associated malignancies (NCT04287868).

Ethics Approval All patients provided written informed consent for participation in a clinical trial that was approved by the Institutional Review Board at the National Cancer Institute (NCT02517398, NCT03427411).

Background MRx0518 is a novel, human gut microbiome-derived, single-strain, oral live biotherapeutic. It is a bacterium of the Enterococcus genus that was selected for development in the treatment of solid tumours for its strong in vivo and in vivo immunostimulatory activity. In vivo studies have shown that MRx0518 can inhibit tumour growth in different syngeneic cancer models as monotherapy and in combination with checkpoint inhibitors. MRx0518 has been shown to reduce Treg and increase Th1 and Tc1 lymphocyte differentiation in vitro, and increase intratumoral CD4+ and CD8+ T cells and NK cells in vivo. This phase I/II clinical study is evaluating the combination of MRx0518 and pembrolizumab in a cohort of heavily pre-treated patients refractory to immune checkpoint inhibitors (ICIs) to assess whether it is safe and can provide a clinical benefit.

Methods The study is being conducted in two parts. Part A is complete and evaluated safety of the combination therapy in a cohort of 12 mRCC and mNSCLC patients. This data was assessed by the Safety Review Committee and it was determined appropriate to proceed to Part B. Part B is now recruiting up to 30 additional patients per indication (RCC, NSCLC or bladder cancer) at several US sites. Patients in both parts must be refractory to checkpoint inhibition. This is defined as having had an initial benefit from PD-1 pathway targeting immune checkpoint inhibition (ICI) but developing disease progression confirmed by two radiological scans ≥4 weeks apart in the absence of rapid clinical progression and within 12 weeks of last dose of ICI. Patients are treated with 1 capsule of MRx0518 (1 × 10^10 to 1 × 10^11 CFU) twice daily and pembrolizumab (200 mg every 3 weeks) for up to 35 cycles or until disease progression. Tumour response is assessed every 9 weeks per RECIST. Blood, stool and urine samples are collected throughout the study to evaluate immune markers and microbiome. Patients may choose to consent to tissue biopsies. The primary objective of the study is to evaluate safety of the combination by monitoring toxicities in the first cycle of treatment. Secondary objectives are to evaluate efficacy via ORR, DOR, DCR (CR, PR or SD ≥ 6 months) and PFS. Exploratory objectives are to evaluate biomarkers of treatment outcome, impact on microbiota and OS and correlation of clinical outcome with PD-L1 CPS/TPS.

Results N/A

Conclusions N/A

Trial Registration NCT0367803

Ethics Approval This study was approved by University of Texas MD Anderson’s Institutional Review Board; approval ref. 2018-0290.

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