AB066. SOH22ABS061. Mucinous rectal cancer is associated with an immune rich tumour microenvironment and enhanced expression of PD-1

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Background: Mucinous adenocarcinoma of the rectum is a molecularly distinct subtype of rectal cancer (RC), associated with a poor response to chemoradiotherapy. Immune checkpoint inhibitors are anti-cancer therapeutics that can overcome tumour mediated immune suppression in solid-organ tumours. Previous work from our group, found significant correlation between mucinous RC and elevated expression of various immune checkpoints. The aim of the current study was to validate our previous findings within our own clinical cohort, and further characterise the immune landscape of mucinous RC.

Methods: Multiplexed immunofluorescence staining of tumour micro-arrays were undertaken using Cell DIVE™. This involves multiple rounds of antibody staining performed on the same tissue sections with mild dye oxidation between successive rounds of staining and imaging. Staining intensity was measured within each tumour core and expressed as mean staining intensity at the patient level.

Results: Our cohort included 15 cases of mucinous and 43 cases of non-mucinous RC. Of the mucinous cohort, 53.3% received neoadjuvant chemoradiotherapy and 14.3% were found to be microsatellite instability-high. The mucinous cohort demonstrated enhanced expression of the immune checkpoint PD-1 (P=0.02), as well as regulatory T-cells (P=0.009). Cytotoxic T-cells were found in greater abundance in the tumour microenvironment of mucinous tumours (P=0.02), though tumour infiltration was only marginally higher in this group (P=0.72).

Conclusions: We have found mucinous RC to be associated with an immune rich tumour microenvironment. PD-1 expression is enhanced in this cohort and correlates positively with a reduction in cytotoxic T-cell tumour infiltration. Our findings strongly support a possible future role for immune checkpoint inhibition in mucinous RC.

Keywords: Cell DIVE; immune checkpoint inhibition; immunotherapy; mucinous; rectal cancer (RC)

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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