AB076. 199. Enhancing anti-tumour immune response: the effect of Ionising radiation on Immune checkpoint expression in OE33 cells

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Background: The use of Radiotherapy (RT) as definitive or palliative treatment for some malignancies has been well established. The possibility of using RT in combination with immunotherapies has gained attention. In addition to control of tumour growth, RT exerts a range of immunomodulatory effects on the tumour and its microenvironment. These serve to prime the tumour for an immune-mediated response. This has led to a renewed focus on the possibility of synergy with older anti-cancer therapies such as radiation therapy.

Methods: We used an isogenic model of oesophageal adenocarcinoma radio-resistance developed in house and fully characterised, with cells irradiated at 3 separate timepoints (24 h, 48h and sequential dosing of 2 Gy daily to a total of 10 Gy). The expression of PD-1, and its ligands PD-L1, PD-L2 were assessed by flow cytometry.

Results: In all three treatment arms, immune checkpoint expression were increased with exponentially higher levels of checkpoints expressed at 10 and 20 Gy. PD-L2 increased significantly ($P<0.02$) in the 10 Gy sequential dosing treatment arm and again was statistically significant in the 10 Gy treatment cohort in the 48hr post radiotherapy group after flow cytometry analysis.

Conclusions: This study identifies possible avenues for potentiating the anti-tumour effects of the host immune system. It identifies that Radiotherapy increase checkpoint inhibitor expression on OE33 cells and as such identifies a starting point for potentially combining immunotherapy with radiotherapy in the treatment of Oesophageal Carcinoma.

Keywords: Immune checkpoint inhibitors; oesophageal carcinoma; radiotherapy

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