Characterization of Pd-L1 in a Barrett's Esophageal Adenocarcinoma Cell Culture Model

Brauer, Elisabeth (School: Gymnasium Saint Augustin)

Introduction While the incidence of esophageal adenocarcinoma is rapidly increasing, the prognosis remains poor with a five-year survival rate of 20%. Therefore, the discovery of new molecular targets is necessary for efficient characterization of oesophageal adenocarcinoma patients. PD-L1, which is overexpressed in many cancers, may also play a role in the treatment of esophageal adenocarcinoma. Materials and methods Barrett's esophagus cells were analyzed for PD-L1, CD86 and HLA-ABC expression in an in vitro model. The cells were treated with chemotherapeutic agents (5-FU, cisplatin and oxaliplatin) and inhibitors targeting immune checkpoints (nivolumab and atezolizumab). Proliferation and expression levels were analyzed. Results While squamous, metaplastic and dysplastic cells showed low PD-L1 expression, oesophageal adenocarcinoma cells showed heterogeneous expression. The highest PD-L1 expression was found in OE33 cells, while OE19 cells showed no PD-L1 expression. OE33 cells treated with 5-FU, cisplatin and oxaliplatin showed increased PD-L1, CD86 and HLA-ABC expression. Proliferation was reduced by 10-20% in OE33 and OE19 cells after treatment with nivolumab and atezolizumab. Conclusion PD-L1 is an important target molecule that is also overexpressed in adenocarcinomas of the esophagus and in the OE33 cell line. Due to the heterogeneous expression of PD-L1 in the different cell lines, it is necessary to test the PD-L1 level prior to therapy. Impairment of PD-L1 by conventional chemotherapeutic agents has been shown in Barrett's esophagus carcinoma cells. Since PD-L1 expression is impaired by conventional chemotherapeutic agents, future studies should also pay attention to altered PD-L1 levels under therapy.