Programmed death ligand 1 in meningioma

Programmed death-ligand 1 (PD-L1) expression is an immune evasion mechanism that has been demonstrated in many tumors and is commonly associated with a poor prognosis. Over the years, anti-PD-L1 agents have gained attention as novel anticancer therapeutics that induce durable tumor regression in numerous malignancies. They may be a new treatment choice for neurofibromatosis type 2 (NF2) patients.

The aim of a study of Wang et al. was to detect the expression of PD-L1 in NF2-associated meningiomas, explore the effect of PD-L1 downregulation on tumor cell characteristics and T-cell functions, and investigate the possible pathways that regulate PD-L1 expression to further dissect the possible mechanism of immune suppression in NF2 tumors and to provide new treatment options for NF2 patients.

PD-L1 is heterogeneously expressed in NF2-associated meningiomas. After PD-L1 knockdown in NF2-associated meningioma cells, tumor cell proliferation was significantly inhibited, and the apoptosis rate was elevated. When T cells were cocultured with siPD-L1-transfected NF2-associated meningioma cells, the expression of CD69 on both CD4+ and CD8+ T cells was partly reversed, and the capacity of CD8+ T cells to kill siPD-L1-transfected tumor cells was partly restored. Results also showed that the PI3K-AKT-mTOR pathway regulates PD-L1 expression, and the mTOR inhibitor rapamycin rapidly and persistently suppresses PD-L1 expression. In vivo experimental results suggested that anti-PD-L1 antibody may have a synergetic effect with the mTOR inhibitor in reducing tumor cell proliferation and that reduced PD-L1 expression could contribute to antitumor efficacy.

Targeting PD-L1 could be helpful for restoring the function of tumor-infiltrating lymphocytes and inducing apoptosis to inhibit tumor proliferation in NF2-associated meningiomas. Dissecting the mechanisms of the PD-L1-driven tumorigenesis of NF2-associated meningioma will help to improve our understanding of the mechanisms underlying tumor progression and could facilitate further refinement of current therapies to improve the treatment of NF2 patients [1].

It is upregulated in aggressive meningiomas [2]

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2)
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