GBM: High AXL-RTK

Bemcentinib (Bem): Immunosuppression & hypoxia 90% recurrence post-treatment Highly invasive Blood brain barrier

Clinical Challenges

Verteporfin. efficacy compared to liposomal NanoVP

2. Photodynamic Therapy (PDT):

Figure 1. Antagonistic (CI<sub>20</sub> = 1.7, CI<sub>25</sub> = 2.0) cytotoxicity of combination treatment of AXL-RTK and PDT laser therapy for U87 glioblastoma cancer cells as measured by MTT assay and analyzed with cell viability normalized to no treatment control (µM Bem). Preliminary experiments were developed with a priming light dose of 0.25 J/cm², 0.35 µM NanovP and an IC50 concentration of the AXL-RTK inhibitor Bemcentinib.

Figure 2. Representation of the application of PDT in the treatment of GBM

Figure 3. Cellular mechanism and role of RTK-AXL and Bemcentinib

Figure 4. Cytotoxicity of PDT was tested on U87 glioblastoma cancer cells with 0.25 µM NanovP across a range of light doses up to 10 J/cm². Cell viability was measured via MTT assay and normalized to no treatment control.

Figure 5. Cytotoxicity of AXL-RTK inhibition was tested on U87 glioblastoma cancer cells using Bemcentinib. A drug dose response curve was developed across a range of concentrations up to 12.5 µM. Cell viability was measured via MTT assay and normalized to no treatment control.

Conclusions

1. In initial experiments, we explored the effects of PDT on a GBM cancer cell line and observed an anti-GBM PDT effect in a light-dose dependent manner (Fig. 4).
2. An anti-GBM effect of Bem. was also observed in a drug dose-dependent manner (Fig. 5).
3. Preliminary experiments of our combination treatment with NanoVP-PDT and Bemcentinib demonstrated an antagonistic effect, with a significant anti-GBM effect of AXL-RTK inhibition on U87 cancer cell viability (Fig.6).
4. Future experiments will reveal whether varying combinations of PDT and RTK-AXL inhibition have a synergistic effect on treatment of glioblastoma cells.

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AXL-RTK Inhibition in Glioblastoma

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2. Bemcentinib (Bem): In clinical trials, Bem is an AXL-RTK inhibitor with proven anti-cancer effects.

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