Teprotumumab Exacerbates Gliosis in a Mouse Model of Optic Neuropathy

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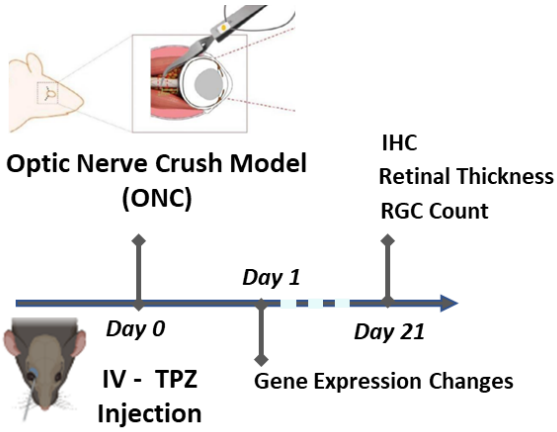
Purpose

To evaluate the potential neuroprotective effects of intravenously administered Teprotumumab (Tepezza, TPZ) in a murine optic nerve crush (ONC) model.

Methods

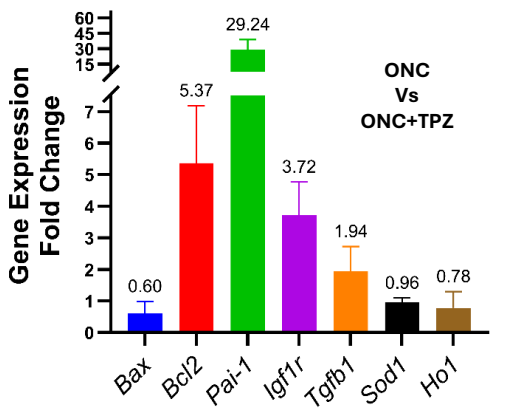
Twenty-Eight wild-type C57BL6 mice underwent ONC to the right eye, intravenous TPZ injection, or both. The mice were divided into three groups: ONC only (n=10), ONC with TPZ treatment (ONC+TPZ, n=13), and untreated controls (n=5). Retinal and optic nerve histology and immunohistochemistry studies were performed on 5 mice per group. Molecular analyses were conducted on 5, and 8 mice in the ONC-only and ONC+TPZ groups. Ischemic-, inflammation-, apoptosis- and stress- related genes were analyzed. The contralateral eyes served as internal controls. Retinal ganglion cell (RGC) loss and retinal thickness were quantified. Immunohistochemical staining for Iba1 and GFAP was performed and analyzed.

Study Design



Results

A



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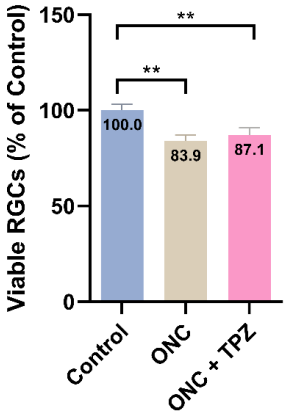

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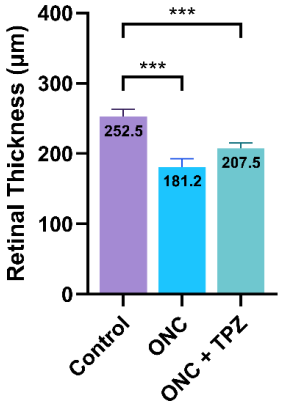

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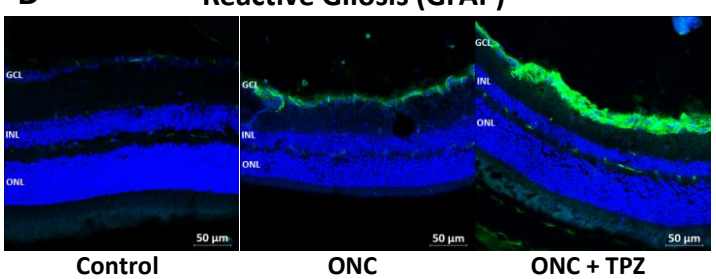

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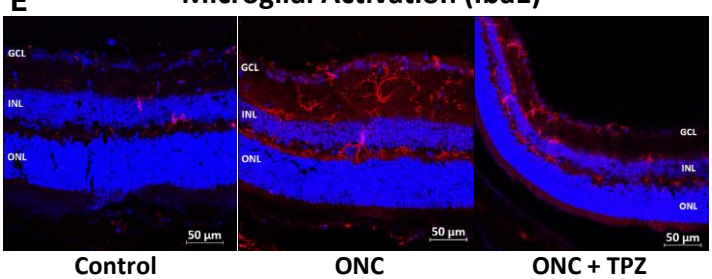

Conclusions

- Tepezza treatment exacerbates reactive gliosis and increases *Tgfb1* & *Pai-1* levels in a mouse model of ONC.
- Tepezza induces a mild protective effect in the ONC mouse model, as shown by increased *Bcl2* expression, decreased RGC loss, decreased Iba1 levels, and preservation of retinal thickness.