Melatonin Receptor Expression in Primary Uveal Melanoma

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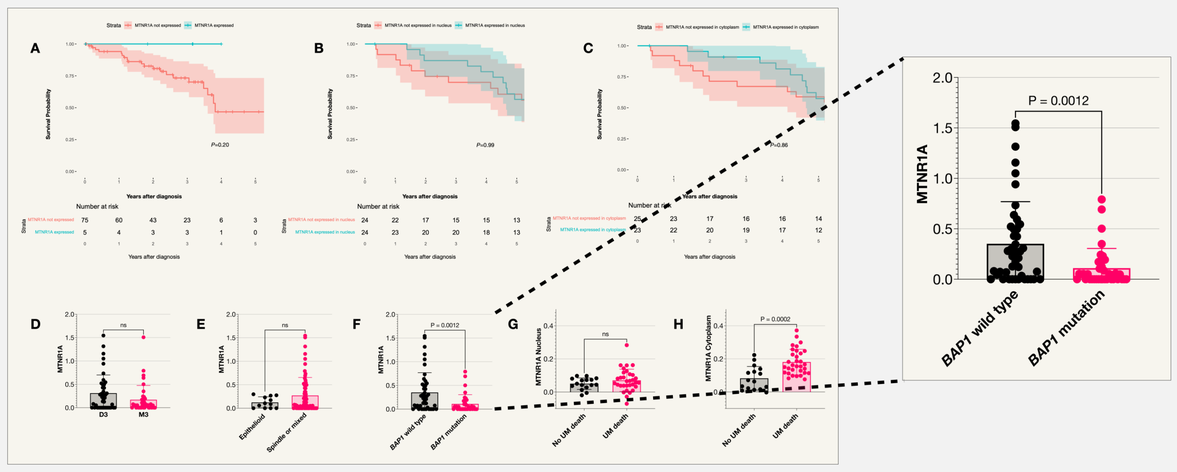
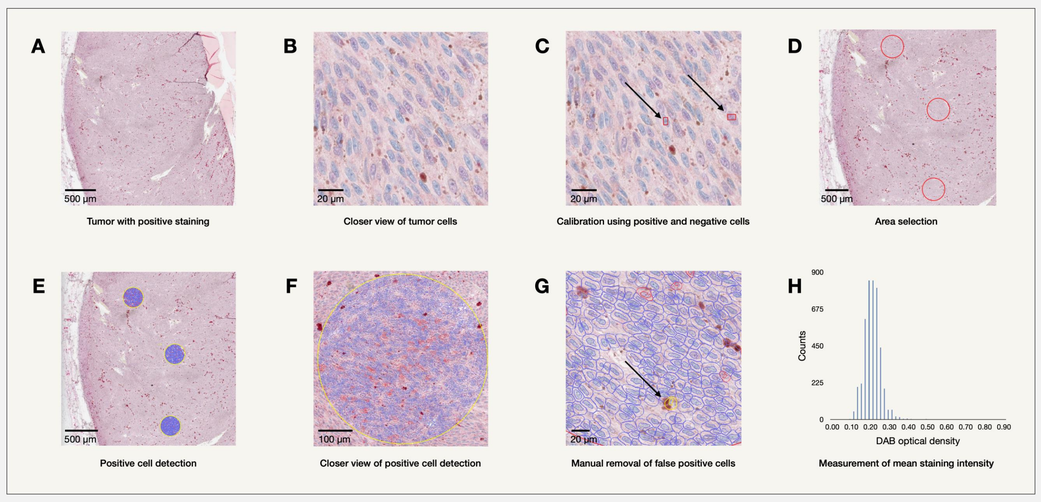
Melatonin's main receptors, MTNR1A and MTNR1B, are minimally expressed in uveal melanoma (UM). Conversely, higher concentrations of NQO2 and RORA, with which melatonin impacts directly or indirectly were found. This suggests a potential pathway through which melatonin may exert oncostatic effects in the disease. Further investigations into other mechanisms by which melatonin may provide therapeutic benefits in UM should be explored.



Kaplan-Meier survival curves for MTNR1A expression and UM-related death. Barplot results comparing expression levels to monosomy 3, BAP1 mutation and cell type.



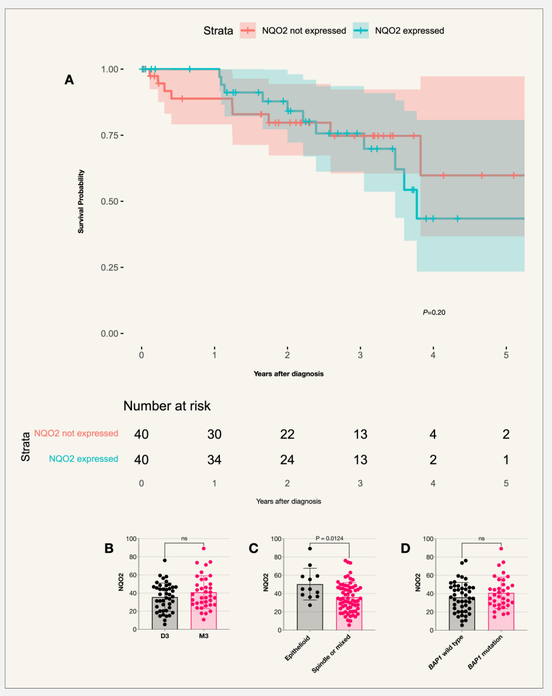
Using QuPath Bioimage analysis v. 0.4.1, mean expresion levels of melatonin receptors were calculated from immunohistochemically stained primary uveal melanoma tissue

Background

Median survival in patients with metastatic uveal melanoma is 12 months with no effective treatments to date. Previous research has highlighted melatonin a a promising oncostatic agent. To better understand how melatonin may impact uveal melanoma, this study investigated expression levels of melatonin receptors in UM cells and whether expression correlates to UM related mortality or prognostic factors.

Methods

Patient data and melatonin receptor expression levels in primary UM tumors were gathered from the Cancer Genome Atlas (80 patients) and through digital analysis of immunohistochemically (IHC) stained tissues sourced from the ocular pathology archive at St. Erik Eye Hospital (49 patients).



Kaplan-Meier survival curves for NQO2 expression and death by UM. Barplot results comparing expression levels to prognostic factors.

Results

- MTNR1A and MTNR1B were minimally expressed in UM tumors.
- NQO2 and RORA were present in higher amounts.
- MTNR1A was significantly higher in patients with BAP1 wild type.
- No correlation between receptor expression and Monosomy 3 or cell type was found.

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