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Diagnosis, treatment, and outcomes in patients with vitreous metastasis from cutaneous melanoma.

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Purpose:

To report the clinical findings, treatment modalities, and outcomes in a series of patients with vitreous metastasis from cutaneous melanoma.

Methods:

This was a single-center, retrospective case series of biopsy-confirmed vitreous metastasis from cutaneous melanoma managed at our institution from 1997 to 2019. Charts were reviewed for demographics, ophthalmic findings, diagnosis, treatment, clinical course, and medical history.

Results:

5 eyes of 5 patients with metastatic cutaneous melanoma with unilateral metastasis to the vitreous were identified. Median age at presentation was 84 (range 37-88) years. Median follow up after ophthalmic diagnosis was 7 months (range 4-8 months). Initial visual acuity ranged from 20/30 to hand motions. Baseline clinical findings included pigment cell infiltration of the vitreous in all cases, anterior segment in 4 cases, and retina in 3 cases. Secondary glaucoma complicated 4 cases. 3 patients received checkpoint inhibitor immunotherapy, all showing partial or complete response. Median time from primary diagnosis to vitreous metastasis was 2 years (range 2-15 years). 1 patient had active systemic disease at the time of vitreous metastasis. Final visual acuity ranged from 20/40 to 20/1000. Ophthalmic treatment included vitrectomy in all 5 cases, intravitreal melphalan (20 μg/0.05 mL) in 3 patients, and intravitreal methotrexate (500 μg/0.1 mL) in 1 patient who could not receive melphalan. 1 patient underwent a trial of 2 monthly melphalan injections for progressive tumor burden before requiring enucleation.

Conclusions:

The persistence of active vitreous metastasis from cutaneous melanoma despite systemic response to checkpoint inhibitor immunotherapy highlights the eye as an immune privileged site and may provide new insights into why uveal melanoma does not respond well to these agents. We recommend vitrectomy for diagnosis and debulking of intraocular tumor cells, followed by periodic intravitreal injections of melphalan. If melphalan is unavailable, methotrexate may be beneficial. While the optimal frequency and endpoint of injections are not known, we recommend monthly injections to inhibit further pigment proliferation. Pigment infiltration is unlikely to disappear completely since some may be acellular, located within melanophages, or associated with growth-arrested melanoma cells.