



Uveal Melanoma: Pathology, Clinical Features and Prognostic Implications

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Citation: Hannah B (2025) Uveal Melanoma: Pathology, Clinical Features and Prognostic Implications. Int J Ophthalmic Pathol 13: 062

Received: 01-Aug-2025, Manuscript No. iopj-26-182524; **Editor assigned:** 4-Aug-2025, Pre-QC No. iopj-26-182524 (PQ); **Reviewed:** 19-Aug-2025, iopj-26-182524; **Revised:** 26-Aug-2025, Manuscript No. iopj-26-182524 (R); **Published:** 30-Aug-2025, DOI: 10.4172/2324-8599.1000062

Introduction

Uveal melanoma is the most common primary intraocular malignant tumor in adults. It arises from melanocytes located within the uveal tract, which consists of the iris, ciliary body, and choroid, with the choroid being the most frequently affected site. Although relatively rare compared to cutaneous melanoma, uveal melanoma is clinically significant due to its potential for local ocular destruction and distant metastasis. Early detection and accurate diagnosis are essential for effective management and improved survival outcomes [1-4].

Discussion

The pathogenesis of uveal melanoma involves malignant transformation of uveal melanocytes through a combination of genetic and environmental factors. Unlike cutaneous melanoma, uveal melanoma is not strongly linked to ultraviolet radiation exposure. Instead, specific genetic mutations play a key role, particularly in genes such as GNAQ and GNA11, which are involved in intracellular signaling pathways that promote cell proliferation. Additional chromosomal abnormalities, including monosomy 3 and alterations in chromosome 8, are associated with aggressive tumor behavior and poor prognosis [5].

Clinically, uveal melanoma may be asymptomatic in early stages

and is often detected during routine ophthalmic examination. When symptoms occur, they may include blurred vision, visual field defects, photopsia, or ocular pain. On examination, choroidal melanomas typically appear as pigmented, dome-shaped or mushroom-shaped lesions beneath the retina. Diagnostic evaluation includes fundus examination, ultrasonography, and advanced imaging techniques such as optical coherence tomography and fluorescein angiography.

Histopathologically, uveal melanoma is classified into spindle cell, epithelioid cell, or mixed cell types. Spindle cell tumors generally have a better prognosis, whereas epithelioid cell tumors are associated with higher metastatic risk. Immunohistochemical markers such as HMB-45 and Melan-A aid in confirming the diagnosis. Despite successful local treatment, metastatic spread occurs in a significant proportion of patients, most commonly to the liver, often years after initial diagnosis.

Management strategies aim to achieve local tumor control while preserving vision when possible. Treatment options include plaque brachytherapy, proton beam therapy, laser-based therapies, and enucleation in advanced cases. Regular systemic surveillance is crucial due to the risk of delayed metastasis.

Conclusion

Uveal melanoma is a potentially life-threatening ocular malignancy with distinct genetic and pathological features. Advances in diagnostic methods and molecular profiling have improved prognostic assessment and treatment planning. Continued research into targeted therapies and early detection remains essential to improve survival and quality of life for affected patients.

References

1. Maurya S, Yadav P, Prajapati V, Gupta VK, Singh V, et al. (2021) A Phytomedicine Catharanthus roseus. 9:454-58.
2. Vishwakarma R, Prajapati V, Yadav RK, Fatima N, Singh V, et al. (2019) A herbal drug of vinca used as an anti-cancer agents. Int J Curr Res 11:7979-82.
3. Suddhasuchi Das, Sharangi B (2017) Madagascar periwinkle (Catharanthus roseus L.): Diverse medicinal and therapeutic benefits to humankind. Journal of Pharmacognosy and Phytochemistry 6:1695-1701.
4. Anonymous (2011) Plant Resources of Tropical Africa. African Ornamentals. Proposals and Examples, PROTA Foundation, Wageningen, the Netherlands.
5. Łata B (2007) Cultivation, mineral nutrition and seed production of Catharanthus roseus (L.) G. Don in the temperate climate zone. Phytochemistry Reviews 6: 403- 411.