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Uveal melanoma presenting as panophthalmitis in the absence of an intraocular mass

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Uveal melanoma presenting as panophthalmitis in the absence of an intraocular mass

Uveal melanoma is the most common primary intraocular malignancy in adults, with 90% of cases originating from the choroid. While many patients are asymptomatic and the tumour is often diagnosed incidentally on routine eye examination, presenting symptoms can include decreased vision, flashes, or floaters.[1] Less frequently, uveal melanoma can present with ocular or periocular inflammation simulating endophthalmitis or orbital cellulitis.[2–7] In the majority of these cases, an intraocular mass will be identified on either computed tomography (CT), B-scan ultrasonography, or magnetic resonance imaging (MRI).[7,8] Rarely, necrotic uveal melanoma can masquerade as an infectious or inflammatory process without evidence of an intraocular mass, leading to a presumed diagnosis of orbital cellulitis or endophthalmitis. In these cases, profound inflammation and concern for infection often result in removal of the globe after intravitreal and intravenous antibiotics have failed; histopathology reveals the unsuspected melanoma.[2–6] Herein we describe a case of necrotic uveal melanoma presenting as panophthalmitis without evidence of an intraocular mass and review the literature surrounding these rare and challenging cases. This report adheres to the Declaration of Helsinki and is compliant with the Health Insurance Portability and Accountability Act.

An 80-year-old man presented with 2 days of right periorbital swelling in the absence of trauma or recent illness. Past medical history was significant for advanced Alzheimer disease (from which the patient was nonverbal and minimally responsive), deep vein thrombosis treated with warfarin, and hypertension. Past ocular history was significant for bilateral cataract surgery 10 years prior. Visual acuity and extraocular movements were unable to be obtained secondary to the patient's mental status. Left eye examination was unremarkable. The right eye showed severe orbital edema, chemosis, conjunctival injection, and corneal opacification with a small central epithelial defect limiting the view of the anterior or posterior chamber on the right (Fig. 1A). Intraocular pressure was elevated to 70 mm Hg, and a reverse afferent pupillary defect was noted. B-scan ultrasonography demonstrated dense vitreous debris concerning for endophthalmitis. Orbital CT showed preseptal inflammation, possible tenting of the right globe, and vitreous debris.

Blood and vitreous cultures were obtained, the patient was treated with intravitreal vancomycin and ceftazidime, and broad-spectrum antibiotics were initiated. Two days later, brain and orbital MRI demonstrated extensive intraocular loculated material, with worsening inflammation concerning for orbital cellulitis (Fig. 1B). The results of blood cultures were negative. Three days after initial presentation, the patient's condition had worsened with new purulent conjunctival discharge and no view of the anterior chamber. Repeat B-scan ultrasonography demonstrated persistent loculated and septated debris, a prominent T-sign, and choroidal detachments consistent with panophthalmitis (Fig. 1C).

After 5 days of intravenous antibiotics, no clinical improvement, and concern for progression of orbital disease, enucleation was performed to remove the source of infection. No extraocular extension or orbital involvement was noted during enucleation. Histopathologic examination of the enucleated globe demonstrated a spindle cell melanoma with extensive ischemia, hemorrhage, and necrosis (Fig. 1D–F).

Postoperatively there was marked resolution of the periocular inflammation. The patient was discharged home after completion of 7 days of intravenous antibiotics. His family elected not to pursue further work-up or care for the uveal melanoma.

In this case, the uveal melanoma was necrotic and presented as panophthalmitis with no identifiable intraocular mass by B-scan ultrasonography, CT, or MRI. The diagnosis of uveal melanoma was made only after primary enucleation on histopathology. A review of the literature revealed 7 previously reported cases of uveal melanoma presenting with inflammatory features in the absence of an identifiable intraocular mass. These cases present a unique diagnostic challenge and require careful consideration of the optimal surgical management.

Multiple studies have described inflammatory symptoms associated with uveal melanoma. Uveal melanoma presenting with predominantly inflammatory features is most often associated with tumour necrosis.[2–5] Additionally, cases of uveal melanoma necrosis and involution over time have been reported.[5] Ocular inflammation presumably results from initial rapid tumour growth, which causes the tumour to outgrow its blood supply, undergo necrosis, and release inflammatory mediators that incite an inflammatory response.[9]

In the 7 previously documented cases of uveal melanoma presenting with inflammation in the absence of intraocular mass, the most common presenting symptoms were vision loss (86%) and pain (57%). Presenting visual acuity was no light perception in 57% of eyes, with noted loss of vision and doubtful light perception in the remaining 43% of eyes. Common findings on examination included periorbital edema (71%), chemosis (57%), proptosis (43%), and extraocular motility restriction (43%). There was no view of the posterior segment in 86% of cases.

When uveal melanoma presents with inflammation, an intraocular mass is commonly identified on examination or on imaging.[3,7,8] Fundoscopy is the most accurate method for diagnosis, but occasionally opaque media prevent a thorough funduscopic examination. In these cases, CT, MRI, and B-scan ultrasonography can be used to rule out an intraocular mass. In our literature review, CT scan was performed on the initial evaluation of 71% of the cases, with

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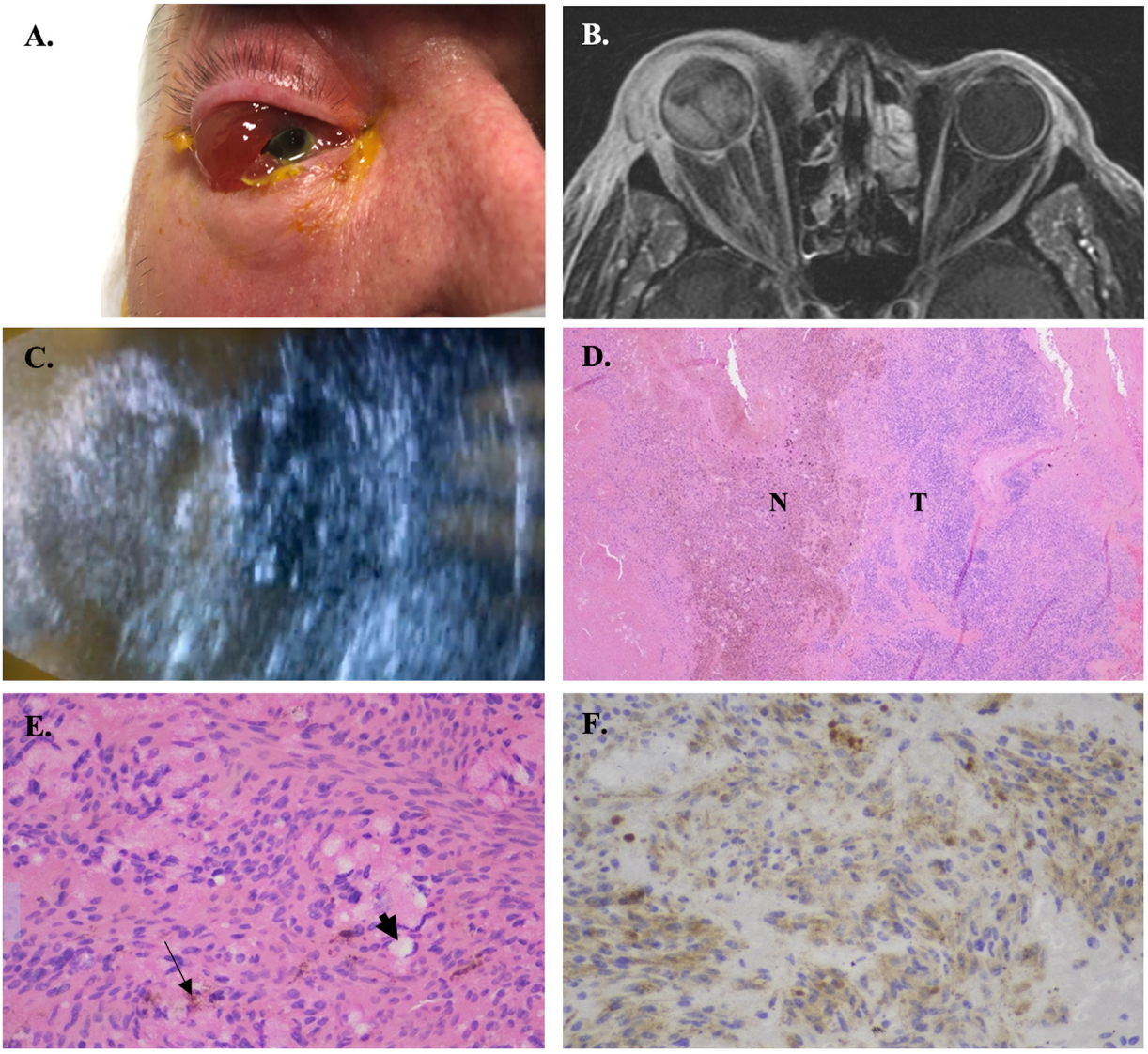

Fig. 1—(A) External photograph revealing periorbital edema and erythema, marked chemosis, and conjunctival injection. (B) MRI T_1 fat-saturated axial image revealing vitreous debris without evidence of intraocular mass, contrast-enhancing periorbital edema, and fat stranding within the orbit. (C) B-scan ultrasonography demonstrating persistent loculated and septated debris, a prominent T-sign, and choroidal detachments. (D) Foci of viable tumour (T) surrounded by areas of extensive necrosis (N) (H&E stain, low power). (E) Spindle melanoma cells with focal intracytoplasmic melanin pigment (black arrow) (H&E stain, high power). Scattered balloon cells with foamy, vacuolated cytoplasm are seen (black arrowhead). (F) The neoplastic cells are strongly immunopositive for Melan-A (Melan-A immunohistochemistry, high power).

concurrent B-scan ultrasonography in 40%. There was no common finding on CT scan among these cases. B-scan ultrasonography, performed in 57% of cases, failed to identify an intraocular mass but did demonstrate immobile, dense echoes (75%) and features consistent with nonclearing vitreous hemorrhage (25%).

Careful consideration should be given to the surgical management of these patients. In the 7 previously reported cases, 3 patients eventually underwent evisceration, 3 patients underwent enucleation, and 1 patient with pulmonary and hepatic metastases had no surgical intervention. Evisceration of eyes harbouring an intraocular malignancy is not recommended because of the increased risk of orbital recurrence and distant metastasis.[10]

Necrotic uveal melanoma can present with intraocular and periorbital inflammation, leading to a diagnostic challenge. While careful clinical examination and multimodal imaging can help identify an intraocular mass in most cases, we report a case of necrotic uveal melanoma in which B-scan ultrasonography, CT scan, and MRI failed to identify an intraocular mass prior to enucleation. A robust inflammatory response may occur secondary to tumour necrosis, with tumour involution precluding its delineation on imaging. The diagnosis of intraocular malignancy should be strongly considered in cases with severe ocular and/or orbital inflammation in the absence of a known inflammatory syndrome or infectious source, especially when visualization of the posterior segment is limited. When globe removal is

Table 1—Clinical characteristics of patients presenting with uveal melanoma not evidenced on imaging

Authors	Age, y	Sex	Presenting Signs	Imaging Findings	Treatment	Histopathology	Malignancy Suspicion
Eagle et al.[3]	89	F	NLP, eyelid erythema, conjunctival injection, chemosis, IOP 70 mm Hg	CT scan: hyperdense vitreous, choroidal thickening	IV antibiotics and methylprednisone followed by evisceration	Necrotic mixed-cell-type melanoma	No
Eagle et al.[3]	49	M	NLP, painful neovascular glaucoma, IOP 80 mm Hg	Ultrasound: nonclearing vitreous hemorrhage	Evisceration	Large uveal malignant melanoma	No
Eagle et al.[3]	56	M	Blind, painful eye, neovascular glaucoma, hypopyon, with history of treated lymphoma	CT scan: No evidence of intraocular tumour	Evisceration	Necrotic mixed-cell-type melanoma	No
Goh et al.[4]	85	F	Fever, NLP, chemosis, edema, proptosis, corneal edema, IOP 50 mm Hg	CT scan: periorbital soft tissue swelling and proptosis with retrobulbar mass Ultrasound: solid retrobulbar mass with homogeneous echogenicity	IV antibiotics, enucleation	Necrotic mixed epithelioid and spindle cell type choroidal melanoma	Unclear
Lea et al.[5]	82	F	NLP, proptosis, conjunctival injection, IOP 50 mm Hg	CT scan: proptosis, scleral thickening, no evidence of mass	Prednisone, acetazolamide, atropine, dexamethasone, enucleation	Completely necrotic choroidal melanoma	Yes
Buckley et al.[2]	32	F	Chemosis, proptosis, corneal edema, IOP 35 mm Hg	CT: enlargement of globe with thickening of its coats Ultrasound: Immobile echos, thickening of eye wall	Enucleation	Necrotic malignant choroidal melanoma	Yes
Macedo et al.[6]	75	F	Pain, loss of vision, periorbital edema, chemosis, anterior chamber hemorrhage	Ultrasound: Low mobility of vitreous cavity and dense echogenicity	IV antibiotics, topical ciprofloxacin, dexamethasone, timolol, dorzolamide, methylprednisone	Unavailable	No
Kasetty et al.	80	M	Orbital edema, chemosis, conjunctival injection, IOP 70 mm Hg, APD	CT scan: preseptal inflammation, tenting of right globe, vitreous debris Ultrasound: dense vitreous debris MRI: exudative or loculated material	IV antibiotics, enucleation	Spindle cell melanoma with extensive ischemia, hemorrhage, and necrosis	No

NLP = no light perception; IOP = intraocular pressure; CT = computed tomography; IV = intravenous; APD = afferent pupillary defect; MRI = magnetic resonance imaging

warranted, we recommend enucleation rather than evisceration to limit the risk of tumour dissemination, even if an intraocular tumour is not identified clinically. Table 1

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