
Nonmelanocytic Uveal Tumors

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Abstract

Aside from melanocytic, vascular, and lymphocytic neoplasias of the uvea and tumors metastatic to the uvea, there are a few far less frequent and diverse, but distinct, forms of uveal tumors. These other forms of uveal tumors include osteoma, neurofibroma, neurilemmoma (schwannoma), neurofibroma and leiomyoma of the uvea. Many of these tumors are often confused with less rare entities like uveal melanoma. Imaging techniques are not always helpful, and the correct diagnosis is often not made until local resection or enucleation is performed and tissue for histopathology becomes available. Treatment recommendations for these uveal tumors are almost exclusively based on a few case reports or small case series and need to be considered judiciously. © 2016 S. Karger AG, Basel

All of the tumors outlined in this chapter are distinctly rare and, as such, are often confused with other, more common intraocular tumors like uveal melanoma. These rare uveal tumors preferentially occur in younger women, and some almost exclusively arise in children. The salient features of these tumor types are summarized in table 1.

Osteoma

This choristomatous malformation typically occurs as a unilateral or bilateral flat lesion in the choroid of young women. Many of these lesions tend to grow slowly, leading to significant visual loss. Any associated neovascularization may be successfully treated, but management of the actual osteoma is complex and controversial.

Table 1. Clinical profile of nonmelanocytic uveal tumors

Entity	Main location	Origin	Gender	Age	Treatment
Osteoma	Choroid	Choristoma	F > M	20–30 years	Anti-VEGF
Neurofibroma	Choroid	Nerve sheath	?	Younger	Surgery
Schwannoma	Choroid	Nerve sheath	F > M	<40 years	Surgery
Leiomyoma	Choroid	Smooth muscle	F > M	Younger	Surgery
Xanthogranuloma	Iris	Histiocytes	F > M	<5 years	Steroids

F = Female; M = male; VEGF = vascular endothelial growth factor.

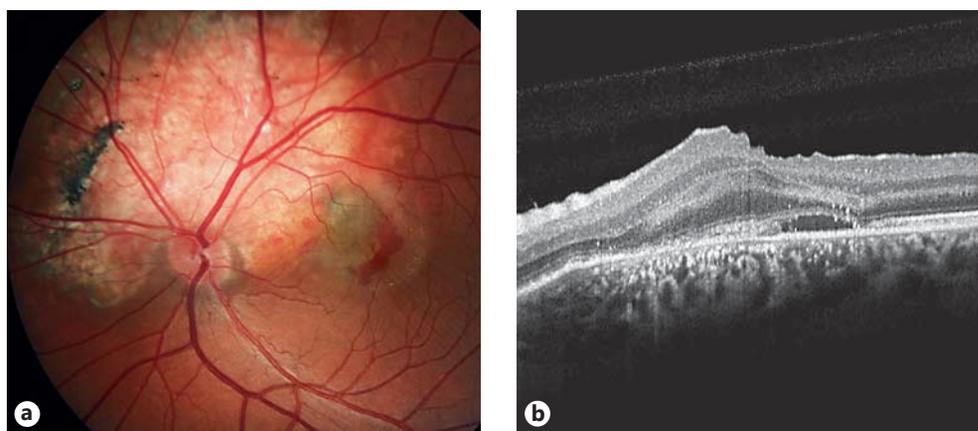


Fig. 1. Fundus appearance of a typical choroidal osteoma. **a** Note the subretinal fluid and hemorrhage in the fovea secondary to a neovascular membrane. **b** Corresponding changes are present in an optical coherence tomography scan.

Clinical Features

Most choroidal osteoma cases present as a unilateral or bilateral lesion in the posterior pole, often in a juxtapapillary or submacular location. Typically, this choristoma appears as a flat or minimally elevated slightly yellow or whitish lesion in a young woman (fig. 1). For reasons largely unknown, only about one third of these malformations occur in men. In approximately 20% of patients, the lesions are bilateral. Most choroidal osteoma tumors appear sporadically, and only rarely are these choristomas familial. Half of all choroidal osteomas grow in size slowly, and their growth is often associated with decalcification or deossification [1]. The retinal pigment epithelium covering the lesion eventually becomes atrophic, leading to photoreceptor loss and a decline in vision. Loss of visual acuity may be sudden when a choroidal osteoma is associated with choroidal neovascularization. At 10 years after presentation, more than half of choroidal osteoma patients have a visual acuity of 20/200 or worse. Poorer visual acuity is seen in patients with decalcified/deossified tumors [1].

Ultrasonography and computerized tomography may demonstrate characteristic highly reflective calcification of the choroid. Fluorescein angiography and indocyanine green angiography reveal less specific findings.

Histopathologic Features

This tumor shows characteristic lamellar bony formation of the affected choroid. Rarely, it may be confused with secondary bone formation.

Management

Lesions without symptoms or growth do not need to be treated specifically, as no therapy has been shown to be effective in reducing the tumor size. Photodynamic therapy may reduce tumor growth, but any resulting decalcification may be associated with a decline in visual acuity [2]. Associated choroidal neovascularization may be successfully managed using anti-VEGF agents or, possibly, photodynamic therapy [3–5].

Neurofibroma

A neurofibroma is a benign peripheral nerve sheath tumor. Most neurofibromas arise in the skin; neurofibroma of the uvea is distinctly uncommon and is often confused with nonpigmented uveal melanoma.

Clinical Features

Uveal neurofibroma may be exceptionally sporadic and solitary, but it is often associated with neurofibromatosis type 1 (NF1) [6]. Patients with NF1 also typically exhibit so-called Lisch nodules, or hamartomas, of the iris. Some uveal neurofibromas appear as diffuse thickening of the choroid, typically in the setting of NF1 [6], but others present as a nodular mass and may simulate nonpigmented choroidal melanoma. The diffuse variant probably corresponds to the plexiform neurofibroma seen in the eyelids and orbits of NF1 patients. Studies using ultrasonography or magnetic resonance imaging may identify a choroidal mass or thickening but rarely provide a specific diagnosis. Similarly, fluorescein or indocyanine green angiography is seldom helpful diagnostically.

Histopathology

These lesions are occasionally associated with a peripheral nerve and are typically composed of a mixture of Schwann cells, fibroblasts, perineurial cells and ganglion cells. Many of the cells in the lesion show immunoreactivity for the rather nonspecific marker S-100 protein.

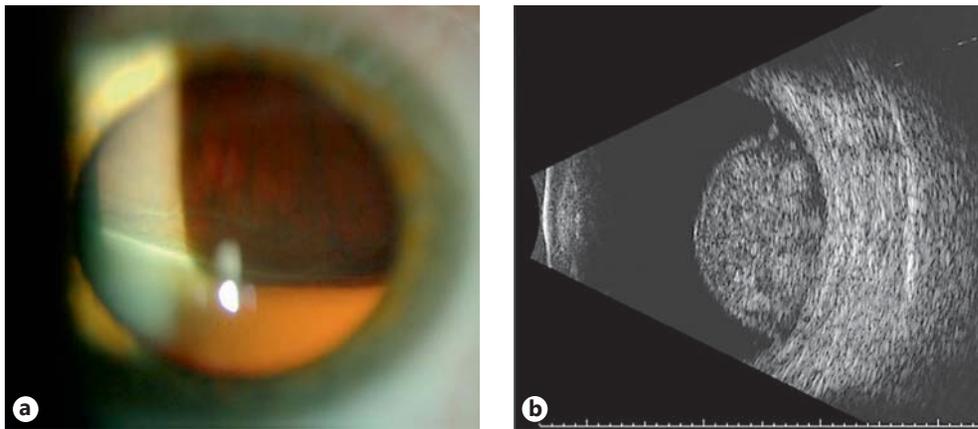


Fig. 2. **a** Slit-lamp photograph of the left eye showing a dome-shaped ciliochoroidal mass. **b** B-scan ultrasound demonstrating a ciliochoroidal mass measuring 17×15 mm (base) \times 11.4 mm (height). Reproduced with permission from Turell et al. [11]. Histopathological and ultrastructural features are not shown.

Management

A reliable diagnosis can sometimes be made clinically; in such cases, observation is often advised, as many of these lesions do not grow. These tumors can be managed successfully by local resection, as choroidal neurofibroma tends to be localized primarily in the suprachoroidal space. Enucleation may sometimes be required in advanced cases.

Schwannoma

This tumor is named after its principal cellular component, Schwann cells of the peripheral nerve sheath. Schwannoma typically presents in the vertebral canal as a dumbbell-shaped lesion. Some schwannomas are clinically associated with a peripheral nerve, and others appear as fusiform lesions that may simulate a neurofibroma. Schwannoma most commonly manifests between 20 and 50 years of age and generally affects both genders equally. This tumor has been associated with NF1 and neurofibromatosis type 2, multiple meningiomas and Carney syndrome (an autosomal condition characterized by hyperpigmentation of the skin, myxoma of the skin and the heart and endocrine hyperactivity). Uveal schwannoma is distinctly rare and, for reasons unknown, is more often seen in women [7].