

Choroidal melanoma: B-scan spectrum

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Abstract

Malignant melanoma of the choroid is the commonest primary intra-ocular tumor in the adults, 85% arising from the choroid and 15% from the ciliary body. We present two cases of intraocular choroidal melanoma with varied manifestations. One in a fifty two year old man and another in a forty-two years old woman presenting with gradual loss of vision in one eye. A bilobed mushroom shaped (figure of eight shape) intraocular lesion was seen to arise from choroid protruding into the vitreous and revealing a “waist” in its midportion in the right eye of fifty two year old man. B-Scan of right eye in the forty-two years old woman revealed a large intraocular mass with mid level echos and lobulated contours filling nearly the whole posterior segment.

Key words: B-scan, choroidal melanoma, color Doppler

Introduction

Malignant melanoma of the choroid is the commonest primary intraocular tumor in adults, 85% arising from the choroid and 15% from the ciliary body.^[1] However, the incidence of choroidal melanoma with classic B-Scan findings is rare in our rural setup. We present two cases of intraocular choroidal melanoma with varied manifestations, one in a 52-years old man and another in a 42-years old woman, both presenting with gradual loss of vision in one eye.

Case Report

A 52-years old man presented to the ophthalmology OPD with complaints of gradual loss of vision in the right eye for six months. The patient was clinically examined and was suspected to have an intraocular tumor on ophthalmoscopic examination. B-scan was done with a 7.5-9.0 MHz linear array probe on a Logic 400 PRO (Wipro-GE, Bangalore, India) ultrasound machine with a direct contact method.

A bilobed, mushroom-shaped (figure-of-eight shaped) intraocular lesion measuring about 8x5 mm was seen to arise from the choroids, protruding into the vitreous and revealing a “waist” in its mid-portion [Figure 1]. The color Doppler showed a vascular pedicle entering the base of the lesion [Figure 2]. There was no associated retinal detachment., A provisional diagnosis of choroidal melanoma was made. The patient had no liver metastases and the chest radiograph

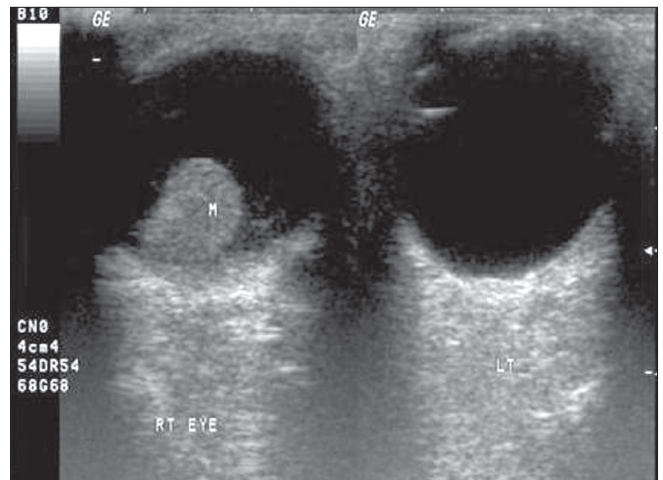


Figure 1: Patient A: A bilobed mushroom-shaped (figure-of-eight shaped) intraocular lesion seen arising from the choroids, protruding into the vitreous and revealing a “waist” in its mid-portion

was normal. Intra-operative fine-needle aspiration cytology (FNAC) of the lesion revealed malignant melanoma. The patient underwent enucleation of the right eye in the same sitting. Histopathological slides confirmed the diagnosis of choroidal melanoma. After enucleation of the eyeball, the gross cut specimen of the right eye revealed a large, darkly pigmented, intraocular choroidal melanoma [Figure 3].

A 42-years old woman presented with gradual loss of vision in the right eye for two months. On ophthalmoscopy, she was suspected to have an intraocular tumor. B-scan of the patient

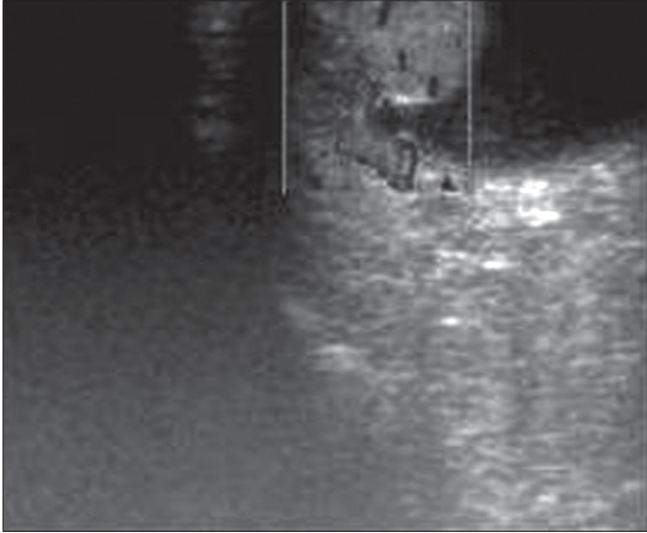


Figure 2: Patient A: On color Doppler, a vascular pedicle is seen entering the base of the lesion



Figure 3: Patient A: Gross specimen of the right eye reveals a large, darkly pigmented intraocular choroidal melanoma

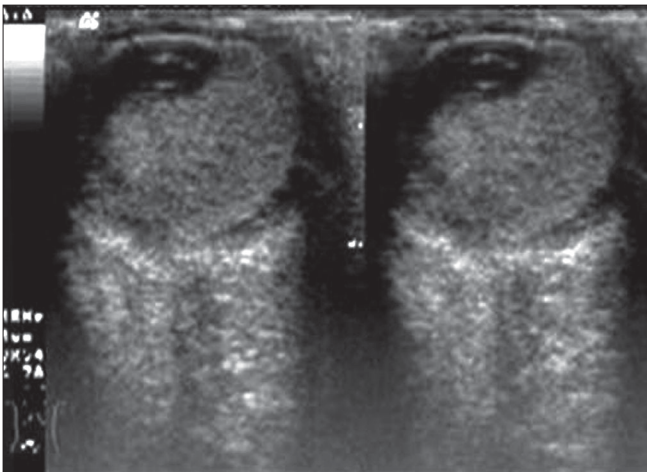


Figure 4: Patient B: B-scan reveals a large intra-ocular mass with mid-level echoes and lobulated contours, filling nearly the whole posterior segment

revealed a large intraocular mass with midlevel echoes and lobulated contours, filling nearly the whole posterior segment [Figure 4]. There was no extrascleral extension and no optic nerve involvement. Considering the age of the patient and B-scan findings, a provisional diagnosis of choroidal melanoma was made. On ultrasonography (USG)

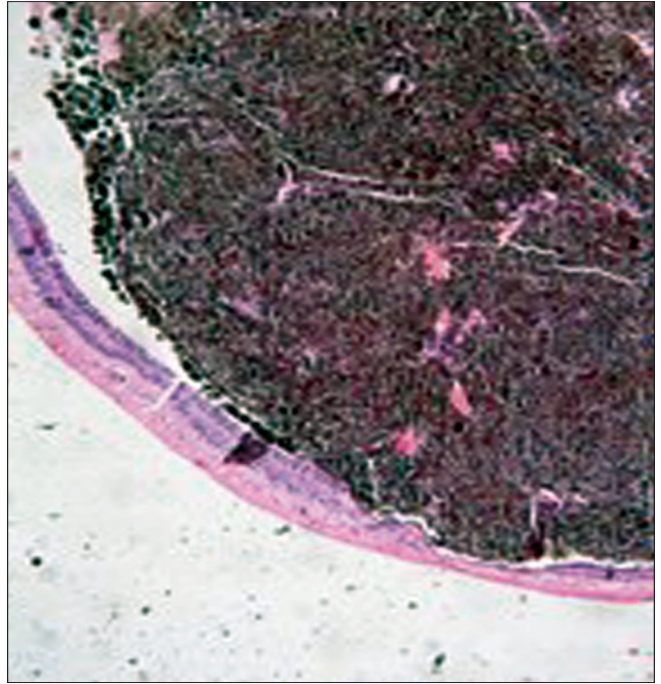


Figure 5: Patient B: Histopathological study of the tumor reveals spindle-shaped cells arranged in columns or around blood vessels

abdomen, the patient had no liver metastases and the chest radiograph was normal. The patient underwent enucleation of the right eye. Histopathological study of the operated tumor revealed spindle-shaped cells arranged in columns or around blood vessels [Figure 5].

Discussion

Malignant melanoma of the choroid is the commonest primary intraocular tumor seen in adults in the age group of 50-60 years. Most tumors arise posterior to the equator of the eye. The lesion is usually single and unilateral, 85% arising from the choroid and 15% from the ciliary body.^[1] Patients with ocular melanosis are at increased risk. Sometimes the tumor develops from preexisting nevi.^[2] Clinically, the lesions near the macula present earlier, as compared to lesions in the periphery, which present later after the development of glaucoma. B-scan is important for assessing the size, position, extent and growth of the tumor. It is more useful in patients with hazy conducting media, in whom ophthalmoscopy is difficult.^[1,2]

The A-scan appearance of choroidal melanomas was first reported by Oksala in 1959. B-scan features were first described by Baum, Purnell and Coleman *et al.*^[2] MRI and CT scans are not as accurate as USG for imaging the eyeball and are also not economically viable, in the rural setting. On B-scan, the lesion is hyperechoic, protruding into the anechoic vitreous, the size of the lesion varying from 0.5 mm to 15 mm in height (average of 5-6 mm). The shape is commonly convex, infrequently polypoidal, occurring due

to restriction of growth by Bruch's membrane. A polypoid or collar-button shape is assumed when the tumor breaks through Bruch's membrane into the subretinal space and protrudes into the vitreous. The tumor shows a mushroom shape if the plane of the scan passes through the stalk of the lesion. The lesion sometimes shows choroidal excavation, which is seen as a concave depression on B-scan. Color Doppler reveals tumor vessels as pulsating channels or lakes of color entering the base of the lesion. Not all tumors are vascular.

MRI is more sensitive in detecting extra-ocular spread. It is the procedure of choice for evaluation of transscleral and perineural spread. The tumor appears hyperintense on T1W images and hypointense on T2W images due to the paramagnetic effects of melanin pigment.^[1-3]

Usually, nonrhegmatogenous retinal detachment is associated with the lesion.^[2] Localization of the tumor with respect to normal ocular structures is important as proximity to the optic nerve may have prognostic significance. Measurement from the lens or ciliary body may be useful when considering placement of radioactive plaques.^[2]

Lymph nodes are not commonly affected but metastasis occurs abundantly in the liver.^[3] After detection of metastases, death usually occurs in a year. If not treated by surgery, the disease is invariably fatal, usually within five years. If tumor size is less than 10 mm and the lesion is wholly intraocular, prognosis is fair.^[3]

The differential diagnoses of choroidal melanoma on B-scan includes metastases, lymphoma, choroidal hemangioma, organized choroidal hemorrhage and organized vitreous hemorrhage. Choroidal melanoma has to be differentiated from metastatic carcinoma and hemangioma on B-scan. Metastases are of varying size, presenting as placoid or convex lesions, usually multiple and they do not show choroidal excavation as in melanoma. They show coarse-

textured echoes as opposed to melanoma. Hemangiomas are convex lesions, usually arising near the optic nerve head, without any choroidal excavation and extra-ocular spread. Hemangiomas are usually not associated with retinal detachment.

Small tumors are treated with local brachytherapy with radioactive disks of gold, cobalt 60 or iodine -131. External beam radiation cryotherapy, laser ablation and transpupillary thermotherapy are other modalities for treatment of tumors less than 10 mm in diameter and 2 mm in thickness. Medium-sized tumors (10-15 mm in diameter and 3-5 mm in height), are treated by plaques or external proton beam radiation. Standard treatment for large tumors is enucleation and if there is orbital spread, exenteration is done.^[3] When metastases are detected, enucleation with radiation therapy is given.

B-scan is an easy, cost-effective and noninvasive modality to diagnose choroidal melanoma. Color Doppler reveals vascularity of the lesion and helps to differentiate it from other benign pathologies like subretinal effusion, macular lesions, etc. It helps in the localization of the tumor and also helps to assess the extra-ocular spread and optic nerve involvement.

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