Case report

Histopathology and immunohistochemistry of choroidal melanocytoma demonstrated by local resection: A case report

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ABSTRACT

Purpose: To describe the clinical and histopathological features of a case of choroidal melanocytoma treated by local resection.

Observations: A 73-year-old man was referred to our hospital with a clinical diagnosis of choroidal melanoma. His best corrected visual acuity at presentation was 20/20 OU. Ocular fundus examination of his right eye showed a pigmented intraocular tumor. Local resection of the tumor was performed under general anesthesia. Histopathological examination of the excised tumor showed proliferation of round to ovoid cells with abundant cytoplasm containing many melanosomes and uniform nuclei and these histopathological findings were compatible with a diagnosis of choroidal melanocytoma. Visual acuity of 20/200 OD has been maintained for over 4 years without local recurrence.

Conclusions and Importance: Clinical diagnosis of choroidal melanocytoma, especially differentiation from melanoma, is difficult and challenging. Local resection of the tumor allowed study of the histopathological features of the choroidal melanocytoma and maintained tolerable vision in the current case.

1. Introduction

Melanocytoma, a variant of the melanocytic nevus, is found equally in all races, unlike uveal melanoma which is uncommon in African American and Asian. Histopathological examination of melanocytomas, especially choroidal melanocytoma, is rarely reported, because of their benign and less sight-threatening nature.

We report the clinical and histopathological features of a case of choroidal melanocytoma successfully treated by local resection.

2. Case report

A 73-year-old Japanese man was referred to the Department of Ophthalmology, Tokyo Medical University Hospital in March 2015 with a clinical diagnosis of choroidal melanoma. He was aware of floaters in his right eye since 5 months before presentation. His best corrected visual acuity (BCVA) at presentation was 20/20 OU, and intraocular pressure was 14 mmHg (OD) and 15 mmHg (OS). Slit lamp examination revealed mild cataract in both eyes. Ocular fundus examination of his right eye showed a brownish tumor protruding from the superior mid periphery and diffuse pigmented opacification in the vitreous (Fig. 1A and B). Ultrasonography demonstrated a solid mass consistent with an intraocular lesion. Single photon emission computed tomography (SPECT) using N-isopropyl-p-[123]I iodoamphetamine ([123]I-IMP), which is useful for the diagnosis of uveal melanoma, was negative. Differential diagnosis included pigmented intraocular tumors such as choroidal melanoma, and adenoma or adenocarcinoma of the retinal pigment epithelium. Two months later, local resection of the tumor (eye wall resection) was performed with the patient’s informed consent. Surgery was performed under general anesthesia with low systolic pressure to control intraoperative bleeding. After phacoemulsification of the lens, the bulbar conjunctiva was dissected along with limbus, and the superior rectus muscle was temporarily detached to obtain a wide surgical field. After the margin of the intraocular tumor was delineated using a 23-gauge endoscopic system, a half-thickness scleral flap with a posterior hinge was made, and cryopexy and diathermy were applied around the scleral bed. Subsequently, the edge of the scleral bed was incised with a slit knife while keeping a safety margin of approximately 1 mm, and then the intraocular pigmented tumor with retina was completely removed. The scleral flap was sutured back with 9-0 nylon and the superior rectus muscle was replaced. Vitrectomy was performed

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to remove vitreous and intraocular hemorrhage, and sulfur hexafluoride (SF₆) gas was injected as tamponade. Finally, the bulbar conjunctiva was sutured.

A gross specimen was excised with the scleral base measuring 11 mm × 10 mm (Fig. 2A). Histopathology showed heavily pigmented tumor with focal necrosis between the atrophic retina and sclera (Fig. 2B). The tumor was composed of round to ovoid large cells containing many melanosomes in the cytoplasm (Fig. 2C). Bleached preparation revealed uniform nuclei with low nuclear-to-cytoplasmic ratio (Fig. 2D). Immunohistochemical staining showed that the tumor cells were partially positive for HMB45, diffusely positive for Melan A and negative for S100 (Fig. 3A, B, C). Ki-67-positive cells were less than 5% (Fig. 3D). These histopathological findings were compatible with a diagnosis of choroidal melanocytoma.

After local resection of the tumor, diffuse intraocular dispersion of melanin pigment involving the macula and optic disc occurred in a few months. Thereafter, epiretinal membrane with pseudo-macular hole developed 24 months after surgery (Fig. 4). Final BCVA of 20/200 and intraocular pressure of 16–18 mmHg (OD) was maintained and no recurrence of the tumor was detected 4 years after local resection.

3. Discussion

Although melanocytoma may occur at all sites of the uveal tract, including the iris, ciliary body and choroid, optic disc is the most common site. Isolated choroidal melanocytoma not associated with optic disc melanocytoma is rare and difficult to differentiate from melanoma clinically. Literature describing histopathologic features of the choroidal melanocytoma is limited, and most of the reported cases were diagnosed after enucleation based on a clinical diagnosis of choroidal melanoma or diagnosed after death.

Clinical features of the current case were a well-defined, protruding brownish mass in the mid-peripheral fundus with diffuse pigmented vitreous opacification. These findings were different from previously reported cases treated by enucleation, which showed elevated intraocular lesion at the juxtapapillary or close to the optic disc.

As we reported before, 123I-IMP SPECT is a useful examination not only for the diagnosis of choroidal melanoma but also for differentiation from benign pigmented uveal tumors including melanocytoma. In the present case, it was difficult to exclude the possibility of choroidal melanoma from ophthalmoscopic and ultrasonographic findings, but the negative result of 123I-IMP SPECT provided critical information.
Histopathological findings of the current case were compatible with previous reports of choroidal melanocytoma\(^7\)–\(^11\),\(^13\) as well as melanocytoma arising from the optic disc\(^4\) and ciliary body.\(^14\)–\(^16\) No necrosis in the tumor was observed in previous cases of histopathologically diagnosed choroidal melanocytoma, except for one case.\(^8\) However, the current case showed focal necrosis in the tumor, resembling ciliary body melanocytoma which is known to have necrosis occasionally.\(^15\)

A few studies performed immunohistochemistry on choroidal melanocytoma. Lafaut et al.\(^9\) reported a case of choroidal melanocytoma positive for HMB45 and negative for S100. Alkatan et al.\(^10\) described a case of choroidal melanocytoma associated with juxtapapillary melanocytoma, which was positive for HMB45. No reports referred to Melan A for choroidal melanocytoma. The current case was partially positive for HMB45, positive for Melan A and negative for S100. Further investigations are required to clarify the immunohistochemical features of melanocytoma for differentiation from melanoma.

The cause of diffuse pigment dispersion in the fundus after local resection of the choroidal melanocytoma is obscure. Incomplete intentional posterior vitreous detachment and incomplete removal of the vitreous to avoid retinal detachment during surgery may be the reason of pigment dispersion and epiretinal membrane formation.

4. Conclusion

Clinical diagnosis of peripheral choroidal melanocytoma, especially differentiation from melanoma, is difficult and challenging. Local resection of the tumor allowed study of the histopathological features including immunohistochemistry of the choroidal melanocytoma and maintained tolerable vision in the current case.

Patient consent

Written informed consent was obtained from the patient for publication of this case and any accompanying images. Ethical approval for this case report was exempted by the institutional review board at our institution.
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Credit author statement

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Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Declaration of competing interest

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