Diode Laser Transscleral Cyclophotocoagulation in the Treatment of Refractory Glaucoma with Iris Melanocytoma

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Iris melanocytoma is a rare melanocytic nevus with distinctive clinical and pathologic features. Secondary glaucoma may develop rapidly and respond poorly to glaucoma medication in some cases. However, few data are available in the literature with respect to the appropriate treatment for refractory glaucoma associated with iris melanocytoma. Herein, we present a 28-year-old man with blurred vision and an elevated intraocular pressure (IOP) of 40 mmHg in his right eye while on multiple glaucoma medications. A dark brown lobulated iris mass with surrounding small pigmented lesions was noted between the 4 and 5:30 o'clock positions. Sector iridectomy was performed and pathologic examination revealed an iris melanocytoma. After surgery, antiglaucomatous medications still failed to control IOP. The patient then underwent diode laser transscleral cyclophotocoagulation (TSCP). At the last follow-up of 15 months, IOP had returned to normal without the need for medication. [*J Chin Med Assoc* 2008;71(10):546–548]

Key Words: glaucoma, iris melanocytoma, transscleral cyclophotocoagulation

Introduction

Iris melanocytoma is an uncommon variant of iris nevus which may result in pigment dispersion and secondary glaucoma.[1–3] Elevated intraocular pressure (IOP) may occur either because of obstruction of the trabecular meshwork by cell debris and pigment from the tumor or a direct compression effect on the trabecular meshwork.[4] In addition to local tumor resection, little is known about the optimal treatment for refractory glaucoma associated with iris melanocytoma. Here, we report the long-term effect of diode laser transscleral cyclophotocoagulation (TSCP) on IOP in 1 such case after the melanocytoma was excised.

Case Report

A 28-year-old healthy man with blurred vision and elevated IOP was referred to our department. His visual acuity was 20/25 in the right eye and 20/20 in the left. IOP was 40 mmHg in the right eye while on multiple glaucoma medications and 20 mmHg in the left eye. In the right eye, a dark brown lobulated irregular-shaped iris mass was noted between the 4 and 5:30 o'clock positions, touching the pupillary margin and surrounded by several small pigmented lesions (Figure 1). Gonioscopy showed an open angle covered by diffuse heavy pigmentation, except where it was occupied by the mass. Ultrasound biomicroscopy showed no involvement of the ciliary body. The optic cup-to-disc ratio was 0.7. Ocular examination of the left eye was unremarkable.

The mass and the surrounding lesions were excised *en bloc* by sector iridectomy. The tissue was densely pigmented without cellular detail on hematoxylin and eosin staining. Bleached sections disclosed plump-shaped cells with abundant cytoplasm, round nuclei, low nuclear-to-cytoplasmic ratio, and conspicuous nucleoli occasionally (Figure 2). There were no mitotic figures

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Figure 1. Right eye shows a dark brown lobulated iris lesion located between the 4 and 5:30 o'clock positions with pupillary margin involvement.

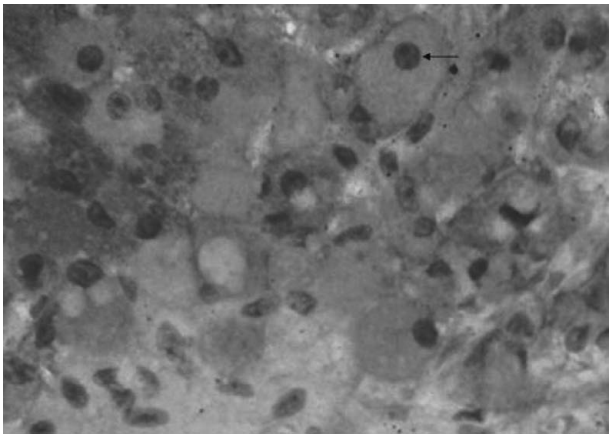

Figure 2. Bleached section of the iris lesion (hematoxylin & eosin, 100×) shows plump-shaped cells with abundant cytoplasm and round nuclei with low nuclear-to-cytoplasmic ratio. Conspicuous nucleoli are occasionally noted (arrow). There were no mitotic figures in all the sections.

in all the sections. Postoperatively, topical 1% pred-forte was administered for 3 weeks. One month after surgery, IOP had decreased gradually and was under control for 2 weeks. However, IOP increased to 36 mmHg despite maximum medical therapy 2 months after surgery. The patient then underwent diode laser TSCP in his right eye. Ten laser spots were applied from 8 to 2 o'clock with a setting of 2 seconds and 2,000 mW. One day after laser therapy, slit lamp examination was remarkable for 4+ cells and 3+ flare, and the patient's visual acuity decreased to counting fingers. After topical 1% pred-forte and oral prednisolone, the anterior chamber inflammatory response decreased to 3+ cells and 2+ flare 1 week afterwards. Ultrasound B scans showed a mild vitreous opacity, and his visual acuity was improved to 0.3. Two weeks later, examination revealed 1+ cells and 1+ flare, and his vision returned to 20/20. By 3 weeks after the procedure, IOP had decreased to 20 mmHg. Postoperative IOP remained normal without medication at the last follow-up of 15 months.

Discussion

Secondary glaucoma is uncommon in iris melanocytoma. In a series of 47 cases, increased IOP was observed in only 5 (11%) eyes at the 5-year follow-up visit.[3] However, secondary glaucoma may develop rapidly, respond poorly to glaucoma medication, and lead to irreversible optic nerve damage in some cases.[5] Although the mechanism of secondary glaucoma in iris melanocytoma appears to be multifactorial, reducing IOP is the only recognized method of glaucoma treatment. Local resection can reduce the tumor burden and allow the trabecular meshwork to recover.[1,2] Moreover, excision provides tissue for diagnosis when malignancy cannot be ruled out. Our case showed a transient reduction in IOP after tumor excision. Unfortunately, the IOP became elevated again 2 months after surgery. Maximal medical therapy failed to control IOP and glaucoma surgery became mandatory.

Iris melanocytomas are generally considered benign. However, occasional malignant transformation of iris melanocytoma has been reported.[6] Nakazawa and Tamai[4] reported 1 case of secondary glaucoma associated with iris melanocytoma that was successfully treated with trabeculectomy combined with biopsy. Nevertheless, the possibility of malignant transformation of the lesion and tumor spreading into the extraocular tissues following filtering surgery cannot be excluded altogether. Laser trabeculoplasty is theoretically contraindicated because it carries the risk of tumor cells spreading. Ciliary body destruction is another surgical alternative. TSCP can be achieved by laser applications *ab externo* without globe invasion. However, complications such as phthisis bulbi, sympathetic ophthalmia and malignant glaucoma have been reported.[7,8] There are few studies on the effect of TSCP on secondary glaucoma associated with intraocular tumor.[9] In our case, TSCP was performed 180 degrees in the superior temporal half away from the tumor's location to reduce the risk of tumor spreading. After TSCP, IOP decreased to normal without affecting visual acuity.

In conclusion, this is the first report of a favorable outcome with diode laser TSCP in the management of intractable glaucoma caused by iris melanocytoma. Diode laser TSCP can be a safe option for such patients after local excision of iris melanocytoma.

References

1. Fineman MS, Eagle RC Jr, Shields JA, Shields CL, De Potter. Melanocytomalytic glaucoma in eyes with necrotic iris melanocytoma. *Ophthalmology* 1998;105:492–6.
2. Zhao JC, Zacks DN, Gragoudas ES, Pasquale LR. Pupil sparing excision of an atypical iris melanocytoma induces remission of secondary glaucoma. *Br J Ophthalmol* 2003;88:842–3.
3. Demirci H, Mashayekhi A, Shields CL, Eagle RC Jr, Shields CL. Iris melanocytoma: clinical features and natural course in 47 cases. *Am J Ophthalmol* 2004;139:468–75.
4. Nakazawa M, Tamai M. Iris melanocytoma with secondary glaucoma. *Am J Ophthalmol* 1984;97:797–9.
5. Shields M. A lesson from the study of secondary glaucomas. *J Glaucoma* 1994;3:265–71.
6. Cialdini AP, Sahel JA, Jalkh AE, Weiter JJ, Zakka K, Albert DM. Malignant transformation of an iris melamocytoma: a case report. *Graefe Arch Clin Exp Ophthalmol* 1989;227:348–54.
7. Kumar N, Chang A, Beaumont P. Sympathetic ophthalmia following ciliary body laser cyclophotocoagulation for rubeotic glaucoma. *Clin Experiment Ophthalmol* 2004;32:196–8.
8. Azuara-Blanco A, Dua HS. Malignant glaucoma after diode laser cyclophotocoagulation. *Am J Ophthalmol* 1999;127:467–9.
9. El-Harazi SM, Kellaway J, Feldman RM. Semiconductor diode laser transscleral cyclophotocoagulation in a glaucoma patient secondary to metastatic tumor to the iris. *J Glaucoma* 1998; 7:317–8.