Core Endoresection as Neoadjuvant Treatment of Uveal Melanoma

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Key Words

Eye · Neoplasm · Uveal melanoma · Endoresection · Neoadjuvant treatment

Abstract

Aim: To present a case of neoadjuvant treatment of uveal melanoma with a limited core endoresection, which enabled ruthenium plaque radiotherapy to be administered. **Material and Methods:** A 77-year-old woman presented in 2005 with a ciliochoroidal uveal melanoma measuring 7.2 by 6.5 mm basally with a thickness of 6.2 mm. The vision in the affected eye was 6/9. Because of diagnostic uncertainty, we performed a biopsy, which produced a copious sample. The biopsy serendipitously reduced the tumour thickness to 4.4 mm, making ruthenium plaque brachytherapy possible. **Results:** Histopathological examination showed the tumour to be a melanoma predominantly of spindle cell type. Postoperative complications included a dense vitreous haemorrhage, which cleared spontaneously, and raised intraocular pressure, controlled with latanoprost. Seven years after brachytherapy, the vision was 6/5 and the thickness of the residual tumour was 2.5 mm. Nine years after treatment, there was no evidence of any intra- or extraocular seeding or distant metastases. **Conclusions:** Core endoresection of a ciliochoroidal melanoma may reduce tumour thickness enough to allow subsequent ruthenium plaque radiotherapy.

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Introduction

Brachytherapy of uveal melanoma with a ruthenium-106 plaque is recommended only for tumours up to 5 mm in thickness. We report a patient with a thick uveal melanoma, which diminished in thickness after core endoresection so that the tumour could be treated with ruthenium plaque radiotherapy.

Material and Methods

A 77-year-old woman was referred in September 2005 with a ciliochoroidal tumour, which had been noticed during phacoemulsification of a cataract in the right eye. She had originally presented with a 9-month history of blurred vision in that eye and had previously received treatment for primary open angle glaucoma. Her general history was unremarkable apart from tonsillectomy at the age of 19 years. The informed consent for collecting, storing and anonymised usage of the personal data for publication has been signed by the patient.

The vision was 6/9 in the affected eye. There was a lens implant in situ. A pale, ciliochoroidal tumour was visible inferiorly through the dilated pupil, involving two clock hours of iris and ciliary body. On ultrasonography, it measured 7.2 by 6.5 mm basally with a thickness of 6.2 mm (fig. 1). The vision in the left eye was 6/7.5, and this eye was healthy.

Because of diagnostic uncertainty (pale tumour appearance with ciliary body involvement), a transretinal tumour biopsy was performed with a 25-gauge vitreous cutter. During the biopsy, the

Fig. 1. Right eye of a 77-year-old woman at presentation (2005). A ciliochoroidal tumour was visible through the dilated pupil (a). On ultrasound examination, the tumour measured 7.2 by 6.5 mm basally with a thickness of 6.2 mm (b). Ophthalmoscopy showed a grey domed tumour (c). Histology showed the tumour to be a melanoma, predominantly of spindle cell type (HE stain; d).

Fig. 2. Slit-lamp appearance of the treated eye, 7 years after surgery. No residual tumour was visible, and the artificial lens was well positioned (a). Chorioretinal scar following brachytherapy (b). Anterior segment ultrasonography showed residual tumour with a thickness of 2.5 mm (c). An anterior segment photograph showed good healing (d).

tumour was noticed to be soft, and this allowed a copious sample to be obtained (fig. 1d). This was done through a small opening at the tumour apex.

Results

Histological examination showed the tumour to be a melanoma, predominantly of spindle-cell type with occasional epithelioid cells. On immunostaining, the tu-

mour cells were positive for HMB-45, tyrosinase and Melan-A and, focally, for NK1C3. Stains for cytokeratins cam 5.2 and MNF 116 were negative. Genetic studies were not performed. Postoperatively, a dense vitreous haemorrhage developed, which cleared spontaneously after several months. The intraocular pressure increased to 40 mm Hg but was well controlled with latanoprost.

Two months postoperatively, the tumour thickness had diminished to 4.4 mm, allowing the patient to be

treated with a 20-mm ruthenium plaque delivering an apex dose of 80 Gy. One year after this brachytherapy, the vision was 6/19 and the tumour thickness had reduced further to 1.7 mm. The antiglaucomatous medications were discontinued 2 years after the brachytherapy. Seven years after the radiotherapy, the visual acuity was 6/5 and the tumour appeared inactive with a thickness of 2.5 mm (fig. 2). Nine years after the treatment, the vision was still 6/19 with no recurrence noted and no evidence of tumour seeding to the sclera. Distant metastases were absent.

Discussion

Serendipitously, biopsy of a ciliochoroidal melanoma reduced the tumour thickness from 6.2 to 4.4 mm, making this lesion treatable with a ruthenium plaque. Unlike conventional endoresection, the tumour core was removed through a tiny opening at the tumour apex.

Because of the patient's age, enucleation was considered, but this was declined by the patient, who was keen to retain her eye if at all possible. Some authors have claimed success with ruthenium plaque radiotherapy of thick uveal melanomas [1]; however, generally, this treatment is not recommended for tumours exceeding 5 mm in thickness. Radiotherapy of such a large tumour was likely to cause radiation retinopathy and neovascular glaucoma (i.e. 'toxic tumour syndrome') [2]. These risks were higher with the anterior location of the tumour [2, 3] making also the scleral necrosis more probable [3]. Cyclochoroidectomy would have risked hypotony and retinal detachment [4]. Furthermore, hypotensive anaesthesia may not have been possible because of the patient's age. For these reasons, ruthenium plaque radiotherapy was our preferred treatment. The wider diameter of a plaque (i.e. 20 mm) was chosen deliberately in order to increase

the safety margins, as most of the ciliary body tumours tend to spread circumferentially involving the angle. This radiotherapy did not cause scleral atrophy, possibly because a smaller dose of radiation was required as the tumour had been de-bulked by the core endoresection.

Concern has been expressed that piecemeal tumour removal may cause tumour seeding around the eye as well as extraocularly [5]. In our experience, this complication seems to be rare [6–8]. We have noted no tumour seeding to the sclera or to the vitrectomy ports in the long run, but such risk cannot be completely excluded on the base of this single one observation. In any case, the chances of tumour dispersal may have been reduced by removing the core through a tiny opening instead of creating a large crater.

In conclusion, there might be a scope for investigating neoadjuvant endoresection as a means of reducing tumour thickness to enable radiotherapy to be administered in patients with a bulky uveal melanoma. Another benefit of such combined treatment would be the lower dose of irradiation needed to sterilise the tumour during the subsequent radiotherapy. However, the risk and benefits of such a procedure should always be balanced with informed consent of the patient and randomised clinical trials in the future.

Statement of Ethics

The patient signed informed consent for the treatment and for collecting, storing and anonymised usage of the personal data for publication. This study complies with general ethic guidelines for human research.

Disclosure Statement

None of the authors has any conflicts of interest or financial relationship to disclose.

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