The ROYAL COLLEGE of OPHTHALMOLOGISTS

BRIEF COMMUNICATION

Ruthenium^{106} plaque brachytherapy for uveal leiomyoma: a new approach to treatment?

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BACKGROUND

Uveal leiomyomas are extremely rare intraocular tumours and present a diagnostic dilemma as they are difficult to distinguish from a uveal melanoma and a reliable differentiation is only possible histologically [1]. Unfortunately, only limited data exist on the effectiveness of radiotherapy. Radiotherapy has been performed only in a small number of cases as first-line treatment in the form of stereotactic and proton beam radiotherapy [2, 3], whereas ruthenium^{106} plaque radiotherapy merely as an adjuvant treatment following local resection [4, 5]. To our knowledge, primary ruthenium^{106} brachytherapy for leiomyoma has not previously been reported.

CASE

A 48-year-old woman presented with a pink tumour in the left iris. On examination the vision was 6/48 and the intraocular pressure (IOP) was 19 mmHg. A pinkish mass affecting the angle between 9:30 and 10:30 was detected with pupil distortion, iris bulging and a superior nasal episcleral 'sentinel' vessel. Gonioscopy showed angle involvement of the affected area. On ultrasound biomicroscopy, the lesion measured 10.9 × 6.4 mm in diameter with a thickness of 4.5 mm, medium echogenicity and positive Doppler phenomenon (Fig. 1).

Clinical differential diagnoses included ciliary body melanoma, iris melanoma or leiomyoma. It was decided to perform 15 mm ruthenium^{106} plaque radiotherapy with biopsy. The sclera contact dose was 498 Gy with an aimed dose of 94 Gy to the tumour apex. Three days later on plaque removal, a biopsy was performed via the anterior chamber (AC) with already noticeable tumour regression.

The biopsy material obtained was centrifuged and cytopsins prepared, which were stained using conventional stains and immunocytochemistry. The cytospins demonstrated scattered bland spindle cells with oval-shaped blunt-ended nuclei and indistinct nucleoli. The cells were immunopositive for SMA but negative for MelanA and AE1/AE3. Together with the clinical information, a ciliary body leiomyoma was diagnosed.

10 weeks post-operatively, the vision and IOP were stable. There was a significant reduction of the lesion, as no lesion was visible on the iris with resolution of the pupil distortion and iris bulging. Only on gonioscopy a small tumour lesion was still visible. On ultrasound biomicroscopy the thickness decreased to 1.9 mm (Fig. 2A, B).

At 6 months the vision remained unchanged (6/36, increasing to 6/7.5 with pinhole) and IOP was 13 mmHg. Gonioscopy showed fibrotic tissue but no tumour recurrence. Ultrasound biomicroscopy showed further tumour regression measuring 4.5 × 4.6 × 1.3 mm (Fig. 2C–F).

DISCUSSION

To our knowledge, this is the first reported case of uveal leiomyoma treated by ruthenium^{106} brachytherapy showing rapid regression and no recurrence 6 months later. A strength of this case report is the histological confirmation of the diagnosis. The main weakness is the short follow-up of only 6 months.

The tumour localisation, invading the AC but still localised, allowed placement of a 15 mm sized ruthenium^{106} plaque including safety margins around the lesion. In the current case, it was surprising to observe the immediate response to the treatment. Nonetheless, enough material for immunohistochemistry could be obtained to diagnose ciliary body leiomyoma. As such, with the low complication rate of ruthenium^{106} plaque treatment in comparison to local resection, and the maintenance of good vision post treatment especially for anteriorly located tumours, it would be prudent to consider this as first line. The rapid shrinkage of this intraocular leiomyoma demonstrates the high radiosensitivity of these tumours. However, further studies need to determine the maximum size of leiomyomas that can be treated with ruthenium^{106} brachytherapy.

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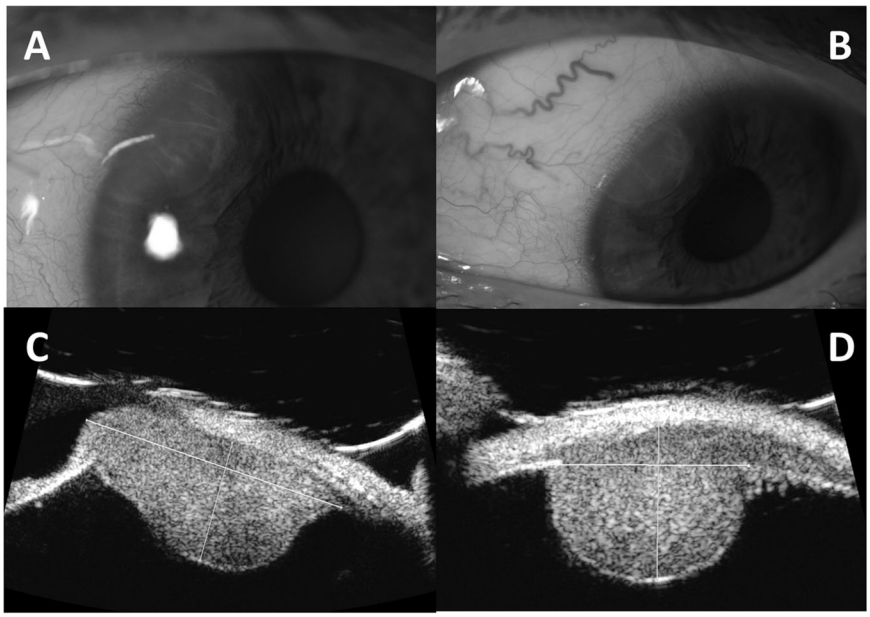

Fig. 1 A 48-year-old woman with a leiomyoma of the ciliary body and iris between 9:30 and 10:30. A Slit-lamp photography showing the pinkish mass with iris bulging indicating a ciliary body involvement. **B** Prominent 'sentinel' feeder vessel. **C** Longitudinal and (**D**) Transverse ultrasound biomicroscopy of the lesion with medium internal echogenicity measuring $10.9 \times 6.4 \times 4.5$ mm.

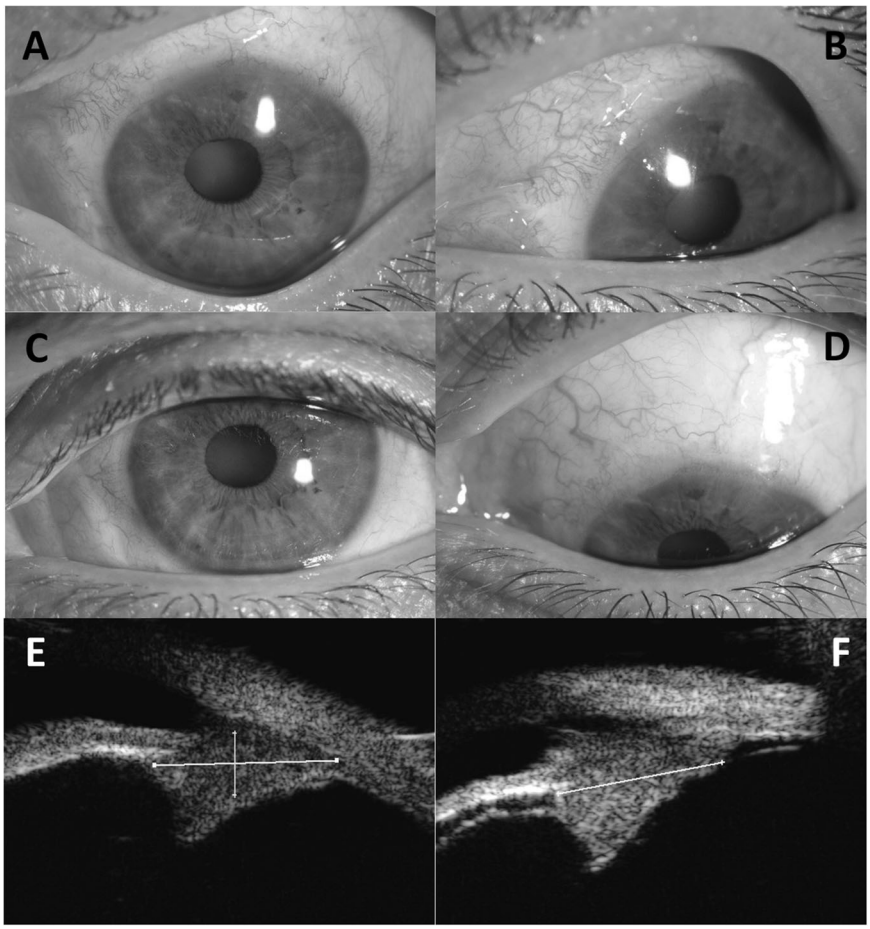

Fig. 2 Clinical appearance after radiotherapy. A, **B** 10 weeks after ruthenium^{106} plaque brachytherapy. **C**, **D** 6 months post-operatively when ultrasound biomicroscopy showed a reduction in size to $4.5 \times 4.6 \times 1.3$ mm (**E**, **F**).

DATA AVAILABILITY

All data are presented in the paper.

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AUTHOR CONTRIBUTIONS

KE was responsible for collecting data, creating the figures, and writing the report. YK and SC contributed to editing the paper. RH and HH provided feedback and revised the manuscript. All authors have read and approved the final paper.

COMPETING INTERESTS

The authors declare no competing interests.

ADDITIONAL INFORMATION

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