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Abstract

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Radiosurgery for Choroidal Melanoma—More than Five Years Follow-Up: Local Control and Toxicity

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Abstract

Objectives:

The aim of our study is to analyze local control, disease-free survival and toxicity in choroidal melanoma treated with single-dose stereotactic radiosurgery (SRS).

Methods:

A total of 7 patients (4 men and 3 women) with choroidal melanoma were attended at our institution between 2003 and 2017. Mean age at diagnosis was 60 years (range 43–79). Three of them were located in the right eye and the other four in the left eye closed to optic nerve (0–3 mm). According to COMS (Collaborative Ocular Melanoma Study Classification), six were intermediate-sized tumors and one of them was a large tumor with a mean tumor volume of 0.49 cm³ (range 0.13–0.93). Visual acuity was diminished in 6 patients prior to treatment. Metastatic disease was ruled out through positron emission tomography (PET), brain magnetic resonance (MR), total body scan (CT) and S-100 protein determination.

SRS first step was a retrobulbar blockage and fixing the eye muscles with thick silk sutures performed by an ophthalmologist. Then, these sutures were attached to the Leksell frame.

MR and CT acquisition with the frame were used to delineate target volume. Minimal marginal dose administered to choroidal tumor was 35 Gy in a single session with 6 MV energy lineal accelerator through cones. Maximum accepted dose to lens was 4 Gy and 18 Gy to optic nerve.

The treatment is completed as an outpatient procedure in less than 3 hours.

Results:

With a median follow-up of 8 years (range 3–19) local control was 100% without the need of any enucleation. Two patients developed distant metastases: one of them in the liver and the other one in the liver and lung. Both died due to metastatic progression despite systemic treatment. As defined in MR, complete tumor regression was observed in two patients, the rest of patients showed a residual scar without evidence of tumor viability. During monitoring two patients underwent cataract surgery, at 7 and 24 months respectively after SRS. A retinal detachment was observed in one patient at 5 years. Neovascular glaucoma was described at 9 months in another patient with previous cataract surgery, it resolved with injection of intravitreal antiangiogenics.

Conclusion(s):

Stereotactic radiosurgery in choroidal melanoma is a safe and minimally invasive treatment with high local control rate and acceptable toxicity. It's a potential alternative to enucleation, especially in large tumors close to critical structures such as the macula and optic nerve where brachytherapy is contraindicated.