

## Preliminary Results of Fractionated Cyberknife Radiosurgery for Uveal Melanoma

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## Abstract

**Objective(s):** We report our clinical experience of a hypofractionated Cyberknife Radiosurgery schedule for uveal melanoma treatment.

**Methods:** Between April 2014 and March 2016 14 patients (pts), mean age 65 years (range 36 – 83 years) suffering from uveal melanoma (11 choroidal melanoma and 1 ciliary body melanoma) were treated at Cyberknife Center, Centro Diagnostico Italiano, Milan. All of the pts had received a diagnosis and referral from an ophthalmologist. Cyberknife radiosurgery was performed delivering a total dose of 54 - 60 Gy (mean 60 Gy) given in 3 or 4 fractions (mean 3) of 15 - 20 Gy (mean 20 Gy) prescribed to the 79 - 82% (mean 80%) isodose surface. All pts underwent orbit MRI with gadolinium for coregistration with the planning CT scans. The planning target volume (PTV) included the contrast-enhancing lesion on MRI plus a 2.5 mm margins in all directions. All pts were irradiated eyelids closed, using a contention with a thermoplastic mask. The mean PTV volume was 2037 mm<sup>3</sup> (range 701.82 – 5792 mm<sup>3</sup>), mean tumor base measured ultrasonographically 11.36 mm (range 7-15 mm), mean thickness 4.79 mm (range 2.5 – 10 mm), with a mean distance of 5.25 mm (range 0 – 15 mm) from fovea and 5.55 mm (range 0 – 13 mm) from optic nerve.

**Results:** After a mean follow-up of 17 months (range 7 – 30) local control was achieved in 100% of pts. No patient underwent enucleation and none developed distant metastases (all pts underwent abdomen ultrasound and liver blood examination once every six months and chest CT once a year). We observed a reduction of 13% in median base and of 44% in median thickness that were respectively 10 mm (range 4.8 – 13 mm) and 2.45 mm (range 0.5 – 5 mm) at last follow-up. Visual acuity was reduced in 64 % of pts, while in the others no change was found. Four pts suffered of radiation maculopathy, associated in one case with atrophy and in three cases with cystoids macular edema. Moreover radiation-induced optic neuropathy and radiation vasculopathy occurred respectively in 3 and 4 cases. 7 pts developed choroidal ischemia and 3 retinal detachment. At the last follow-up none had corneal anomalies.

**Conclusion(s):** These initial results of our Cyberknife schedule are consistent with data in literature and show a safe, minimally invasive and well tolerated method for treating uveal melanoma. Further follow-up is necessary.

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#### Abstract

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