

CyberKnife treatment for patients with optic pathway related benign CNS tumors

N. Martínez Moreno, M. Kusak Lambea, R. Martínez Álvarez

Hospital Ruber Internacional, Unidad de Radiocirugía

**Resumen**

Objective. Treatment of benign brain tumors with single dose radiosurgery is common practice, with proven good results. new radiation techniques extended this treatment to those patients with large or previously irradiated lesions and patients not eligible for surgery. In those cases a decrease in irradiation dose or the use of a fractionation regime is needed in order to minimize the dose in peripheral structures. The limited tolerance of the optic pathway to single doses is a challenge that we have tried to overcome by hypofractionation with excellent preliminary results.

Materials and Methods. Between 2006 and 2012, 23 patients with benign CNS lesions related to the visual pathway were treated using CyberKnife. Most (87%) were meningioma and one schwannoma and two pituitary adenomas. Gender distribution was 39% female and 61% male. Average age was 61 years (12-86). There are 83% lesions located in the skull base. Two patients were embolized first and 57% of patients had previously undergone surgery (2 per patient). One patient (GH secreting pituitary adenoma) was treated with LINAC-Radiosurgery eight years earlier. Prior to treatment 11 patients (47,8%) had varying degrees of visual deficits. The mean volume was 37 cc (2,9-127). Three sessions on alternate days were used, except for one patient who received five sessions contiguous days. The mean marginal dose in patients treated with three fractions was 21 Gy (7 Gy/session), range: 18-27 Gy. The optical pathway received a mean total dose of 14 Gy (5 Gy/session), range 8-18. Prophylactic steroids during radiosurgery were prescribed in 65% of patients.

Results. Mean follow-up was of 24 months (12-43). Local control was obtained in 93%, with a reduction in size in 26% of patients at a mean volume reduction of 19%. There was visual improvement in three patients and one case of visual field deterioration. In relation to other neurological symptoms, two patients showed clinical worsening but only one of them by disease progression. GH levels decreased in the patient with the secreting adenoma.

Conclusions. The results are very positive for local control and with low visual toxicity in this group of patients with large brain tumors in which the optical pathway is compromised or at risk, where the age and the existence of concurrent risk conditions for surgery is relatively high. Both high volumetric control as the low toxicity and simplicity of the technique makes the CyberKnife Radiosurgery an excellent and well tolerated alternative for them.

<http://dx.doi.org/10.1016/j.rpor.2013.03.534>

Exclusive radiosurgery in metastatic brain lesionsM. Rodríguez-ruiz¹, A. Olarte Garcia¹, E. Arevalo², G. Valtueña³, L. Arbea⁴, M. Moreno-jimenez¹, M. Cambeiro¹, J. Guridi⁵, J. Arbizu⁶, R. Martínez-monge¹, J. Aristu¹¹ Clínica Universitaria de Navarra, Radiation Oncology² Clínica Universitaria de Navarra, Medical Oncology³ Clínica Universitaria de Navarra⁴ Clínica Universitaria de Navarra, Radiation Oncology⁵ Clínica Universitaria de Navarra, Neurosurgery⁶ Clínica Universitaria de Navarra, Nuclear Medicine**Resumen**

Introduction. Surgery or radiosurgery (RC) followed by whole brain irradiation (WBI) is the treatment of choice in patients (pats) with brain metastases (BM). The omission of WBI increases cerebral recurrence rate without detriment in overall survival. The introduction of new systemic therapies have improved survival in metastatic pats raising concerns about long-term toxicities of WBI. We retrospectively analyzed pats with BM treated with exclusive RC at our institution.

Material and Methods. Inclusion criteria: patients who refused surgery or WBI, life expectancy > 1 year, 70% ≥ 4 MC, primary tumor and/or oligometastatic disease controlled, Karnofsky ≤ The treatment was performed in an adapted linear accelerator using circulate collimators or micro-multileafs.

Results. Between 1998 and 2012, 46 pats (32-NSCLC, 6-breast, 4-renal-melanoma and 4-others) with a median age of 57 years and a total number of 69 BM were treated with RC alone (median dose 16 Gy, 14-19 Gy). Sixty-percent of patients had extracranial metastatic disease at the time of RC. The median number of BM treated was 1 (1-4), synchronous or metachronous diagnosis were observed in 34% and 66% of patients, respectively. Twenty-six patients (60%) presented cerebral progression and 23/26 patients (88%) were rescued with WBI (11pats), RC (3pats), surgery (1pats), chemotherapy (4pats) and combination of these treatments (4patients). With a median follow up of 62-months, the median survival and the 1,3,5-y OS were 20 months and 62%, 42% and 32%, respectively. Six of 31 patients (19%) died due to cerebral progression. The 1,3,5-y local-brain-control was 80%, 73% and 73%. The 1,3,5-y overall cerebral recurrence were 47%, 35% and 20%. The 5-y patients free of WBI was 70%.