

Preliminary results of acoustic neuroma radiosurgery at Cruces University Hospital

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Objective. To evaluate the clinical results achievable using stereotactic radiosurgery, the principal alternative to microsurgical resection to treat acoustic neuromas. The goals of radiosurgery are, long-term prevention of tumor growth, maintenance of neurologic function, and prevention of new neurologic deficits.

Methods. We studied thirty-six patients who had undergone radiosurgery under the guidance of magnetic resonance, at Cruces University Hospital, between 2009 and 2012. Outcomes were determined through the use of serial imaging studies, clinical evaluations, the need for surgical intervention, and a survey of patients. We included only patients who completed at least one clinical-radiological evaluation. Radiographic tumor progression was strictly defined as any temporary or sustained increase in tumor diameter of at least 1 mm in two dimensions or 2 mm in any direction.

Results. Seventy-five percent of patients were women. Median age was 63 years (range 33–84). The tumor was on the left side in the 63.89% of cases; had a mixed localization in the 61.11%. Previous resection performed in 4 patients (11.11%). Fifty percent of patients were treated with monofraction (12 Gy), median maximal tumor diameter was 12 mm (range 7.5–18), median PTV volume 0.92 cc (range 0.17–3.16). Eighteen patients were treated with a median dose of 50 Gy (range 18–54), median maximal tumor diameter 23.5 mm (range 5–55), median PTV volume 5.97 cc (range 0.7–50.97) prescribed to the 98% of PTV, and delivered in 3–25 fractions. Median follow-up period was 15.5 months (range 4–34). The crude tumor control rate was 91.66%. 92% of patients retained useful hearing, and 8 had minor neurological complications, such as worsening of initial symptoms or grade 1 cranial neuropathy.

Conclusions. Long-term follow-up of our data is needed, but our preliminary results confirmed the excellent tumor control reported, hearing preservation, and acceptable toxicity.

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Radiosurgery (SRS) for intracranial pathology and skull base: Results from a single institution experience

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Background. Radiosurgery is commonly used for the treatment of intracranial pathology and skull base as metastases, meningiomas, neurinomas and MAV. This study provides a retrospective evaluation of patients with this type of malignancy and benign treated with radiosurgery at our institution.

Objectives. Provide details of the results of a single institutional experience with SRS.

Methods. We present 312 patients treated with SRS between 2005 and 2012. Among them, 152 were treated (49%) patients with brain metastases with a maximum of 4 per patient, 59 (19%) patients with acoustic neuroma, 56 (18%) meningiomas, 20 (6%) AVMs, and 20 (6%) patients with less common diseases.

Results. Of all the patients treated with brain metastases, 20% are still alive. Regarding the treated neurinomas exhibit stable disease, 84% of them, just as meningiomas and cerebral AVM whit minimal long term toxicity.

Conclusions. Given the results we can say that the SRS is a safe treatment technique for brain metastases in number less than 4, meningiomas, neurinomas and MAV.

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Radiosurgery in the treatment of recurrent malignant gliomas: Experience at the Carlos Haya Hospital

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Introduction. The treatment of malignant glioma consists in complete surgery or broadest possible, followed by radiation on the previous location of the removed tumor and, in many cases, with concomitant and adjuvant chemotherapy. These tumors have a high recurrence rate despite receiving appropriate treatment, being proportional to histologic grade. Once you see a recurrence, reoperation and change line chemotherapy are usual. Due to the advancement of radiosurgery techniques and greater availability, is being increasingly used for the treatment of small size recurrence, or to treat some rest after surgery.

Objective. Descriptive study of patients suffering from malignant gliomas treated with radiosurgery in the Carlos Haya Hospital.

Material and methods. Since the implementation of the technique of radiosurgery in the Carlos Haya Hospital in Malaga in 2010, 9 patients were treated with brain gliomas with Brainlab radiosurgery system. The prescribed dose ranged from 16 to 22 Gy, depending on the size of the treated lesion in each case and the dose of radiation that had previously received.

Results. Of the 9 patients, 5 were men and 4 women. The most common first symptom was seizures in 5 patients. The distribution of patients according to histology was as follows: 5 glioblastoma multiforme, 2 oligodendrogliomas, 1 ependymoma and 1 astrocytoma grade II.

Conclusions. Tolerance of radiosurgery in these patients has been good and the treatment in the absence of increased monitoring, appears to increase local control of the disease.

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Radiosurgery with circular collimators for intracranial meningioma

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Introduction. Radiosurgery was established in the last decades as a non-invasive and highly effective treatment for intracranial meningiomas. From 1998 to 2010, this technique has been performed in Hospital Universitario de Canarias with circular collimators, so an interesting temporal mark is available to retrospectively analyze a population treated with a nowadays unused technique. Objective Retrospective study on circular collimator radiosurgery treated intracranial meningiomas.

Method. From 1998 to 2010, 81 patients, 59 women and 22 men, with 90 meningiomas were treated. Mean age 57 years (21–86); 17 had been surgically treated. Median follow-up 5 years. Mean meningiomas volume 1.19 cc (0.04–5.99).

Location. Convexity 18%, tentorium cerebelli 15%, cavernous sinus 15%, petrosphenoclivial 13%, sphenopalatine angle 9%, parasagittal 9%, others 21%. Radiosurgery was performed with a Lineal Accelerator Saturn 43 with 6 MeV photons and 3DLine System using circular collimators.

Results. There were four deaths related to meningioma progression, all of them before two years post-treatment. Eleven deaths were attributed to intercurrent diseases. At diagnosis, 41 patients were symptomatic; 16 solved symptoms during the first year, eight in the second and five later. Radiologically, 32 lesions decreased, 49 stayed unchanged and nine progressed. Two cases of the last ones required surgical rescue. Two patients experienced some minor side effects during the procedure. Late complications were limited to one case of the followings: radionecrosis, partial seizures, acoustic-vestibular syndrome, stroke and Bell Paralysis with oedema, all of them solved without after-effects.

Conclusion. Radiosurgery results an effective and low-morbid treatment for intracranial meningiomas, as single treatment or combined with surgery. Circular collimators gave technical means to reach good clinical results.

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Robotic image-guided hypofractionated radiosurgery (cyberknife) in perioptic meningiomas

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Objectives. Analyze the feasibility and safety of treatment using robotic image-guided hypofractionated radiosurgery for meningiomas close to the optic tract and acute toxicity related to it.

Methods. 12 patients with meningiomas located at ≤ 2 mm from the optical path were treated in our unit from April-2011 to July 2012. The median age was 56 years (range 40–77 years). The prescribed dose ranged from 2100 to 2500 cGy in 3–5 consecutive fractions. The max dose to chiasm and/or optic nerve was limited to ≤ 2300 cGy. Previous to treatment, 11 of 12 patients had mild visual field defects, one patient had no visual impairment.

Results. The median volume of the treated lesions was 11.07 cm³ (range 0.38–36.92 cm³). The median rates of conformity index were 1.25 (range 1.15–1.18). The median prescription isodose was 84% (range 79–91%). The median maximum dose to chiasm was 2214 cGy (range 780–2384 cGy) and to optic nerve nearest 1949 cGy (range 769–2562 cGy). 100% of patients had stable radiological meningioma on MRI on their follow up, and no one had associated edema. No patient had acute toxicity on the visual pathway and 3 of 12 patients referred visual improvement.

Conclusions. Treatment of meningiomas adjacent to the optic pathway with robotic image-guided hypofractionated radiosurgery can be a safe and a feasible option for treatment without long-term monitoring periods. Despite the complex localization of these lesions, hypofractionated radiosurgery using 3–5 fractions is presented as a viable alternative to conventional treatment. In our series, no patient had worsening of vision acuity or toxicity related to the treatment. Long-term monitoring is needed to assess the local control of the lesion and the absence of chronic toxicity.

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