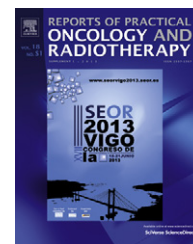


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Radiosurgery and REF

Stereotactic body radiation therapy for bone metastasis: Initial experience

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Introduction and objectives. Clinical studies has showed the efficacy of stereotactic body radiation therapy (SBRT) for pain control with consequent improvement of quality of life, and also secondary to local tumor control a longer survival in oligometastatic disease. We present our initial experience using SBRT for bone metastasis in single fraction with 16 Gy in oligometastatic disease. **Material and methods.** Selection criteria: Patients with localized bone metastasis, up to three separate sites are permitted by imaging study (bone scan, PET, CT or MRI), in case of spinal lesions each of the separate sites may have a maximal involvement of two contiguous vertebral bodies. At the moment, we have treated three female patients, two of 47 and one of 51 year old; the primary histology are breast, lung and neuroendocrine, all of they had a single bone lesion, two had spinal lesion in D12 and one in sacrum who had pain with numerical rating pain scale of 8/10. Primary tumors were treated with curative intent by their respective protocol. The bone metastases were treated with SBRT with 16 Gy in a single fraction. The follow-up are planning at 1, 3, 6, 12 and 24 months from treatment time, with physical examination, rating de pain at each visit and PET at second visit (three months from treatment).

Results. Currently we have a mean follow-up of eight months, no adverse effect was detected, the patient who had pain, showed a complete pain relief. All of these patients are in local tumor control, evaluated with PET at three months from treatment.

Conclusion. SBRT in a single fraction of 16 Gy to bone metastasis was well tolerated in this series, without toxicity at the moment, and good local control. Although this is a small series, seems than long-term results can show us a new perspective in oligometastatic disease patients.

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Adaptive radiotherapy in SBRT using eXaCradle by changing electronical density

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Introduction. Adaptive radiation therapy is a closed-loop radiation treatment process where the treatment plan can be modified using a systematic feedback from measurements. It is especially relevant in SBRT treatments where tumour shrinkage is frequent between fractions. The whole process must be sufficiently fast and straightforward to be feasible. Increasing number of software options are now showing up in the market.

Purpose. To describe a new procedure for adaptive radiotherapy in SBRT treatments by using the Treatment Planning System (TPS) tools for image fusion and assignment of electronic densities.

Material and methods. A CT simulation for SBRT using the immobilization system eXaCradle (Anatomical Geometry) is performed. The treatment is designed in TPS Pinnacle-v9.2. A kV-CBCT is performed prior to each fraction. Image matching is executed ensuring that the center of mass of tumours in both set of images is the same. In case of differences in margins between the observed and the simulated GTV bigger than 3 mm, the treatment is not delivered. The CBCT images are sent to the TPS where they are fused with simulation ones. The precise immobilization that eXaCradle provides ensure a correct image fusion. On the

simulation images a contour is added resulting from the difference between the simulation and CBCT. This region corresponds to the shrinkage of tumour and its electronic density is accordingly modified and made equal to the surrounding region. We optimize the treatment on the modified volume.

Results. We use a procedure that do not need of dedicated software, only the tools we already have. It allows an adaptive radiotherapy treatment in less than 1h, for the SBRT fractions that need it.

Conclusions. This effective method of adaptive radiotherapy, initially conceived for SBRT treatments is now implemented and applied with success in conventional ones that may clearly benefit from it.

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Brain metastases: Experience with radiosurgery in the Carlos Haya Hospital

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Introduction. Brain metastases are the most common brain lesions, 20–30% of the total. The treatment of these lesions changes from patient's PS, the number of brain lesions, the presence of metastases in other organs and primary tumor control. Possible treatments, radiosurgery is being increasingly used by technical advance, the greater availability of it and being a non-invasive and relatively simple to perform.

Objective. Descriptive study of patients treated with radiosurgery metastases affections of Carlos Haya Hospital.

Material and methods. Since the implementation of the technique of radiosurgery in the Carlos Haya Hospital in Malaga in 2010, have treated 15 patients with brain metastases with radiosurgery Brainlab system. Patients performed fine cut brain contrast MRI between 48 and 72 h before treatment. These images are fused with the brain CT that's realised on the day of treatment in stereotactic conditions. In the planner (iPlan) are outlined to address the volume and organs at risk, being the cochlea particularly important in this disease. The prescribed dose ranged from 18 to 24 Gy, depending on the size of the treated lesion in each case and whether they had received preview cranial RT.

Results. Of the 15 patients treated, 11 were men and 4 women. In 5 patients, metastases were discovered by chance, 5 had neurological deficit, 2 headaches and 1 epileptic seizure. 12 of the 15 patients had as primary pulmonary tumor. 10 patients were treated for a single metastasis, 4 patients of two synchronous metastases and 1 of three metastases.

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Casuistry of acoustic neuromas treated with radiosurgery in H.R.U. Carlos Haya

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Introduction. The acoustic neuroma is a tumor arising from Schwann cells of the VIII cranial nerve. Symptoms include hearing loss, tinnitus, dizziness and V cranial nerve disorders. For treatment we evaluate different possibilities. The standard treatment is surgery, no free of complications. Due to the advancement of radiosurgery, it is a treatment option for patients with tumors less than 3 cm or surgical rest after the intervention.

Objective. To present a descriptive study of patients with acoustic neuromas treated with radiosurgery and acute toxicity presented.

Material and method. Since the implementation of the technique of radiosurgery in the Carlos Haya Hospital in 2010, 33 patients affected of acoustic neuroma have been treated with radiosurgery Brainlab system. Patients performed a fine cut brain-MRI with contrast 48–72 h before treatment. These images are fused with the brain CT which is made on the day of treatment in stereotactic conditions. In the planner (iPlan) the volume to deal with and the risk organs are contoured, with the cochlea of particular importance in this disease. In 33 cases, the prescribed dose was 12 Gy, with a variable number of arcs according to each case, with an average of 6–8.

Results. A total of 33 patients have been treated, 15 were male and 18 female. The symptom that most frequently appeared was hearing-loss in 31 patients, followed by tinnitus in 13 patients. 5 patients had previously undergone surgery, and the radiosurgery took place over the remaining tumor. No patient have presented serious acute toxicity up to this time.

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