

Early Results of A Mono-Institutional Experience for Stereotactic Radiotherapy with Cyber Knife in Multiple Brain Metastasis

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Abstract

Objectives: In recent years stereotactic radiosurgery (SRS)/ radiotherapy (SRT) prescription was extended to patients with more than 5 brain metastases. To report our early experience with single treatment plan stereotactic radiotherapy (SRT) delivered with Cyber knife® (Accuray, Sunnyvale, CA) in pts with multiple brain metastasis.

Methods: From March 2018 to January 2019 a total of 87 brain metastases in 8 pts (five females and three males) were treated with a single treatment plan SRT in our institution. Patient's median age was 73 (29-81) years and median Karnofsky Performance Status (KPS) was 90% (70-100). Primary site of tumors was melanoma in three pts, breast in two pts, lung in two pts, and one patient had lung and breast cancer. Three pts previously underwent Whole Brain Radiotherapy (WBRT). Gross target volume (GTV) and organs at risk (OAR) were defined after simulation computer tomography (CT) and contrast-enhanced T1-weighted MRI fusion. Planning target volume (PTV) was defined adding a margin of 1 mm to GTV.

Results: Median number of brain metastasis was 8 (6-21). Median GTV volume was 0,16 cm³ (0,02-17,45 cm³), and median PTV volume 0,42 cm³ (0,07-20,89 cm³). All pts received preventive steroid therapy, median dose was 4 mg/day (2-16 mg). Median prescribed radiotherapy dose was 32,5 (22-37.5) Gy, at a median isodose of 77% (65%- 89%), in a median number of 5 fractions (1-5 fr). All fractions were delivered in consecutive days. Median estimated treatment delivery time was 75 (43-114) minutes, depending not only on volume and number of lesions, but also on setup and performance status of the pts. With a median follow of 5.3 months (0.5-11.1 months), none of the patients presented acute or early late toxicity after SRT. In five patients evaluated with contrast-enhanced MRI all presented CR, PR or SD in the irradiated lesions. Two patients presented intracranial progression due to new lesions at the first control, three months after treatment. Four patients were dead at the last follow up, one with heart failure two weeks after the treatment, one with systemic progression and two with intracranial progression.

Conclusions: Single plan SRT in pts with more than five brain metastases is feasible with a good toxicity profile and it is a promising option of treatment in these pts.

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Abstract

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