

# STEREOTACTIC RADIOTHERAPY FOR BRAIN METASTASES: EXPERIENCE OF SALAH AZAIEZ INSTITUTE IN TUNISIA

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## BACKGROUND

Stereotactic radiotherapy (SRT) is a highly precise form of RT initially developed to treat small brain tumors and functional abnormalities of the brain. Delivering the RT in a few sessions of high doses, can improve safety and allows the normal tissue tolerance. This study is to characterize the dosimetric properties and accuracy of a novel treatment platform in our institute for frameless, image-guided SRT for Brain metastasis (BM).

## METHODS

We collected 9 patients treated for BM. A linear accelerator-based SRT systems Varian® with implemented Brain Lab® nominal Cones diameters from 7 to 40 mm were employed **Fig 1**. Frameless brain lab® technique and iPlan Net Planning Treatment Systems (TPS) were used thanks to the donation of IAEA. Patients were treated with non-coplanar arcs in all cases.



**Figure 1: cones collimators**

## RESULTS AND DISCUSSION

The most common primary tumor was non-small lung cancer followed by breast cancer. We irradiated solitary BM in 6 cases. In 2 cases, patients were operated for symptomatic lesion before adjuvant SRT delivered in the located tumor bed. We used fractionated SRT for all patients three fractions of 9 Gy in the isodose 80 % in 3 patients, three fractions of 7.7 Gy in 3 patients and 5 fractions of 5.7 Gy in the isodose 70 % in three patients because of located near Critical organs such as brainstem (BS). The median conformity and heterogeneity index were respectively 1.8 (1.35-2.2) and 1.2 (1.18- 1.35). The dose constraint was respected. The maximal dose was respectively 1.65 Gy, 1.08 Gy for BS and optic nerves. The brain volume received 24 Gy was 4.9cc (0.7- 10 cc). SRT was well tolerated for all cases after immediate clinical evaluation. We have detected any case of radio necrosis after a median follow up of 30 months.

**CONCLUSION:**

Our initiation of SRT is very encouraging thanks to the donations of the IAEA. We hope to enlarge our experience for other indications such as schwannomas and meningiomas in the future as well as radiosurgery.