STEREOTACTIC BODY RADIOTHERAPY (SBRT) FOR LUNG METASTASES (MTS) TREATED WITH FLATTENING FILTER FREE (FFF) BEAMS: EVALUATION OF EARLY RESPONSE AND ACUTE TOXICITY

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AIMS

To report data on local control (LC) and acute toxicity for patients with pulmonary metastases (MTS) treated with image-guided stereotactic body radiation therapy (SBRT) using a flattening filter free (FFF) linac, compared with a similar group of patients previously treated without image-guided radiation therapy (IGRT).

METHODS

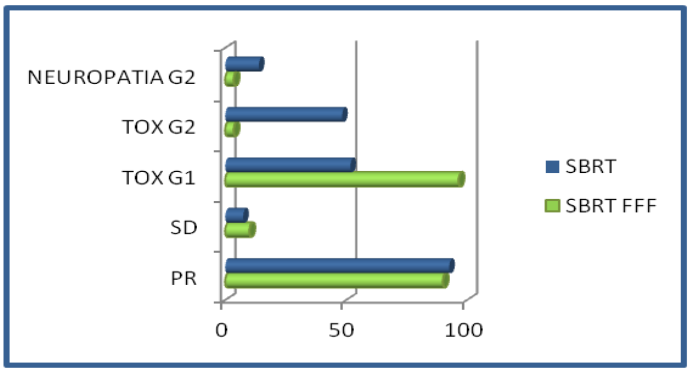
From January 2017 to April 2018, 57 patients (45-86 years) with 72 pulmonary MTS were treated. Delivered doses were 39-60 Gy in 3/5 fractions in alternate days or 20 Gy in single fraction with 10 MV FFF photon beams. Techniques were conformal dynamic arcs (43 lesions), HybridArc (20 lesions) or RapidArc-VMAT (9 lesions). Inter and intra-fractional positioning verification was achieved using the ExacTrac X-Ray and kV-cone beam computed tomography (CBCT) systems.

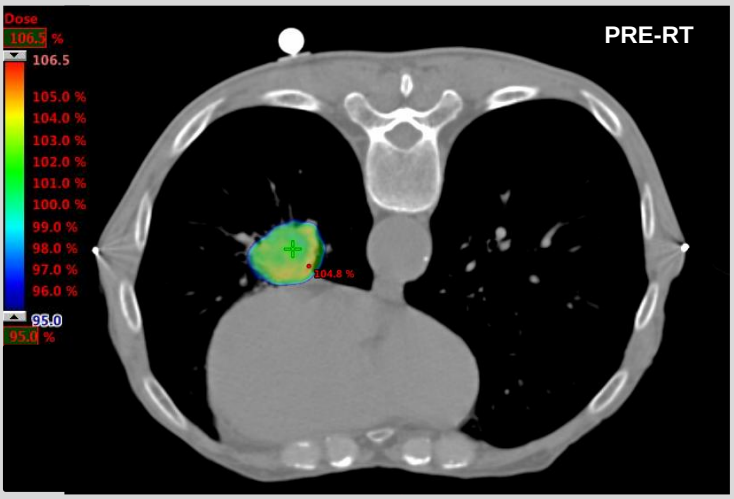
All patients had 1-3 lesions ≤ 3 cm, life expectancy greater than one year and received clinical and instrumental evaluation (CT) at 45-60 days after treatment. Response assessed: Complete (CR), Partial (PR), Stable Disease (SD) and Progression (P). The pulmonary dermatological and neurological toxicities were evaluated according to the CTCAE version 4.0 scales. The control group included 116 patients (47-89 years) and 135 MTS treated with SBRT from January 2012 to December 2016 with 6 MV photon beams, conformal dynamic arcs and HybridArc techniques and MV-MV inter-fraction setup verification.

RESULTS

We found: PR in 65 MTS (90%) and SD in 7 (10%); pulmonary toxicity G1 occurred in 55 patients (96.5%) and G2 in 2 patients (3.5%); 2 patients (3.5%) reported G2 neuralgia and radiculitis. No skin toxicity occurred.

In the control group: 125 MTS (92.6%) presented PR, and 10 (7.4%) SD; pulmonary toxicity G1 reported in 60 patients (51.7%) and G2 in 56 patients (48.3%); 12 patients (13.9%) showed G2 neuralgia and radiculitis. No patients presented skin toxicity.





CONCLUSIONS

In our short clinical experience of pulmonary SBRT with FFF beams, we found very good disease control and low acute toxicity profiles, proving to be a safe and effective therapy. However, greater follow-up is needed to assess long-term disease control, possible relapse time and late toxicity.

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