The challenge of inoperable Hepatocellular Carcinoma (HCC): results of a single-institutional experience on Stereotactic Body Radiation Therapy (SBRT).

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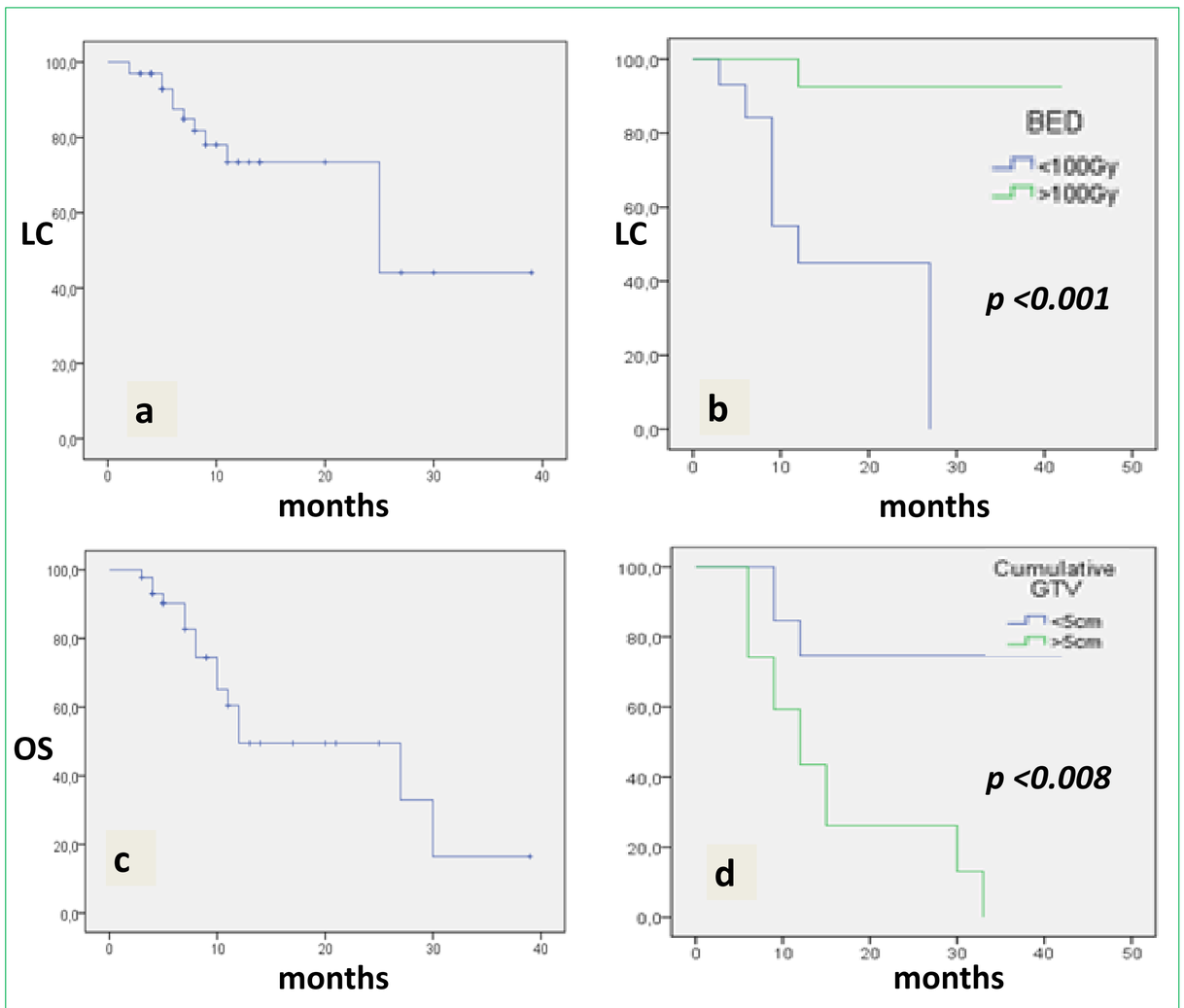
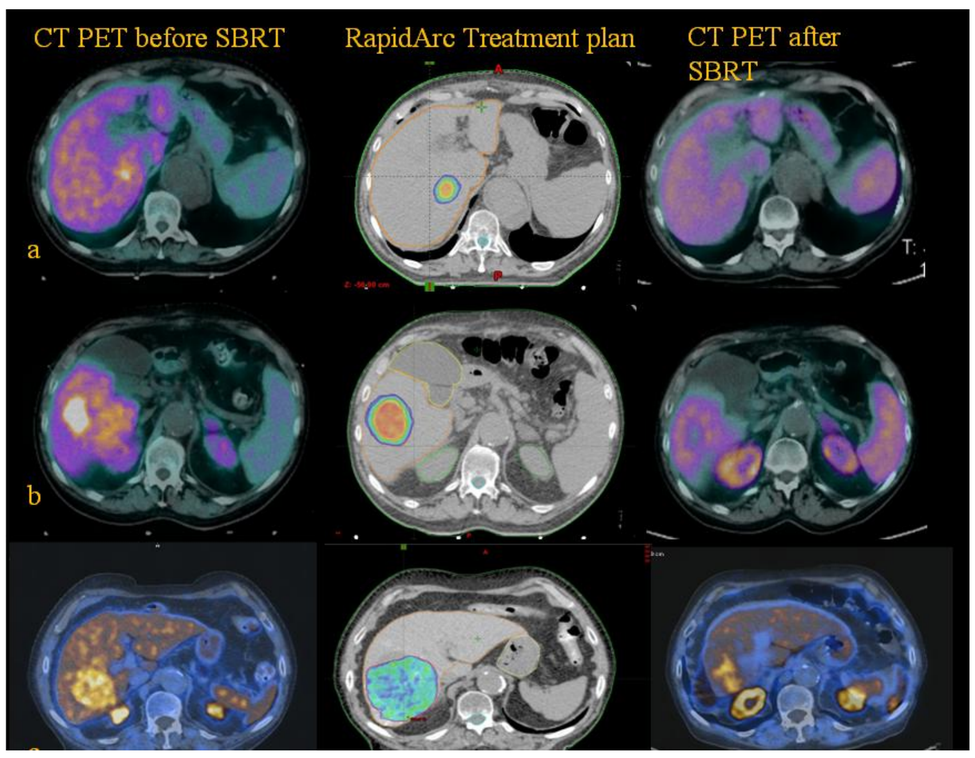
Introduction To evaluate the feasibility and efficacy of SBRT in the treatment of HCC unsuitable for standard locoregional therapies.

Materials & Methods Patients with 1-3 inoperable HCC lesions with diameter ≤10cm were treated by SBRT. According to lesions size and liver function, three prescription regimens were adopted: 48-75Gy in 3 fractions, 36-78 Gy in 6 fractions or 40-50Gy in 10 fractions. SBRT was delivered using the volumetric modulated arc therapy technique with flattening filter free photon beams. The primary end points of this study were in–field local control (LC) and toxicity. Secondary end points were overall survival (OS) and progression free survival (PFS).



a: Local control. b: Local Control stratified per BED.
c: Overall survival. d: Overall survival stratified per GTV size



Examples of dose distributions and treatment outcome for three patients in the three fractionation groups (a: 3 fr, b: 6 fr, c: 10 fr).

Results Between February 2011 and April 2014, 54 patients with 82 HCC lesions were irradiated. All patients had Child-Turcotte-Pugh (CTP) class A or B disease. Thirtynine lesions (48%) were treated with a dose prescription of 48-75Gy in 3 consecutive fractions, 30 (36%) received 36-78 Gy in 6 fractions and 13 (16%) were treated with 40-50Gy in 10 fractions.

Median follow-up was 7 months (range 3-39 months). Actuarial LC at 7 and 12 months was 85% and 74%, respectively. Regimens with Equivalent Dose >100Gy in 3 and 6 fractions was a significant prognostic factors for LC ($p<0.001$) in univariate analysis Median OS was 12 months and actuarial OS at 1 year was 50%. Univariate analysis showed that OS significantly decreased in the subgroup of patients with Cumulative GTV >5cm ($p<0.008$). Median PFS was 7 months, with a 1-year PFS rate of 24%. A significant (≥ grade 3) toxicity was observed in 9 patients (16%) two-six months after the completion of the treatment. No classic RILD was observed.

Conclusion SBRT represents a feasible alternative for the treatment of colorectal liver metastases not amenable to surgery or other ablative treatments in selected patients, showing optimal local control and promising survival rate.

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