

Stereotactic Ablative Radiotherapy as first local therapy for lung oligometastases from colorectal cancer: a single-institution cohort study.

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Introduction: Clinical data are lacking on Stereotactic Ablative Radiotherapy (SABR) for lung metastases from colorectal cancer (CRC). The study was designed with the primary aim of estimating SABR efficacy and its potential role as an alternative to surgery in this setting.

Materials and Methods: Forty consecutive patients who received SABR as first local therapy at the time of lung progression were included, from 2005 to 2013. Primary study endpoint was overall survival (OS). Secondary endpoints were progression-free survival (PFS) and safety.

Results: A single nodule was treated in 26 patients (65%), 2 nodules in 10 patients (25%), 3 in 3 patients (7.5%) and 4 in 1 patient (2.5%), for a total of 59 lesions. The median delivered biological effective dose was 96 Gy, in 1 to 8 daily fractions. Median follow up time was 20 months (range 3-72). OS rates at 1, 2 and 5 years were respectively 84%, 73% and 39%, with 14 patients (35%) dead. Median OS was 46 months. Progression occurred in 25 patients (62.5%), at a median interval of 8 months; failure at SABR site was observed in 3 patients (7.5%). Progression-Free Survival rates were 49%, 27% at 1 and 2 years, respectively.

Patients characteristics	
Age (median, range)	70 (44-86)
Male	20 (50%)
Performance Status (ECOG)	
0	31 (77.5%)
1	9 (22.5%)
AA Charlson CI	
≤ 2	10 (25%)
3-5	17 (42.5%)
> 5	13 (32.5%)
CRC stage*	
I	3 (7.5)
II	12 (30)
III	15 (37.5)
IV	9 (22.5)
Not evaluable	1 (2.5)
Number of lung lesions	
1	26 (65%)
2	10 (25%)
3-4	4 (10%)
Size of largest lesion, mm (median, range)	15 (10-40)
Pathological Diagnosis	
FNA	5 (12.5%)
Bronchoscopy	3 (7.5%)
Not done	32 (80%)
CEA level pre-SABR	
Normal	23 (57.5%)
High	7 (17.5%)
Not available	10 (25%)
Disease-free intervals, months (median, range)	20 (1-103)

Table 1. Patients characteristics

Treatment technique	
3D-CRT	14 (24%)
VMAT	45 (76%)
SABR dose (BED 10 Gy)	
26 Gy/ 1 fr. (93.6)	40 (68%)
45 Gy/ 3 fr (112.5)	11 (19.5%)
55 Gy/ 5 fr. (115.5)	5 (8.5%)
60 Gy/ 8 fr. (105)	2 (3.5%)
48 Gy/ 4 fr. (105.6)	1 (1.5%)
BED 10 Gy (median, range)	93.6 (93.6-151.2)
SUVmax (median, range)	6.1 (2.3-11.2)

Table 2. Radiation treatment

Variables	Univariate Analysis			Multivariate Analysis		
	HR	95% CI	p	HR	95% CI	p
DFI < 18 months	2.2	0.7-6.4	0.14	2.3	0.7-7.6	0.17
Presence of previous metastasis	1.6	0.5-4.9	0.39	2.4	0.6-9.3	0.19
AA Charlson CI (continuous)	1.0	0.9-1.1	0.55	1.1	0.9-1.3	0.32
Size of largest lesion > 15 mm	2.7	0.8-8.6	0.09	2.0	0.6-6.9	0.26

Table 3. Univariate and multivariate Cox analysis for overall survival.

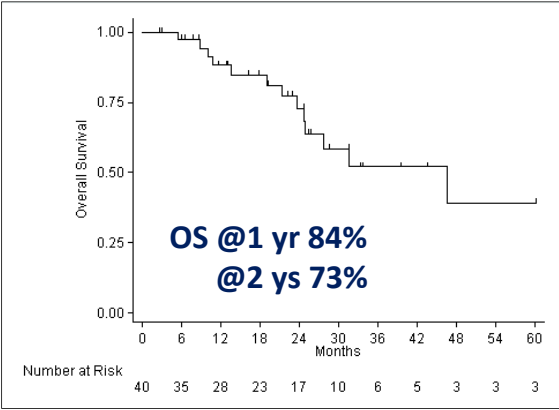


Figure 1. Overall Survival

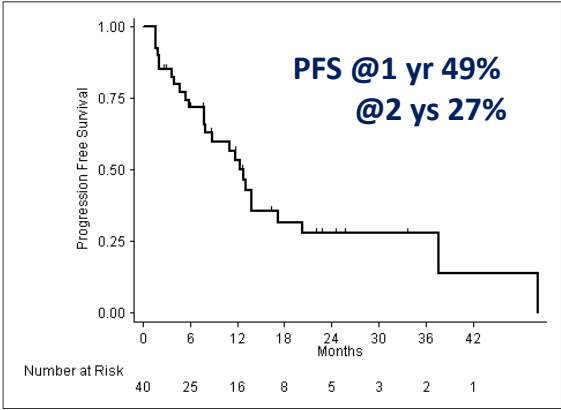


Figure 2. Progression-Free Survival

Conclusion: Results of this retrospective exploratory analysis provide initial evidence supporting the efficacy and safety of SABR in patients affected with CRC lung oligometastases and suggest the inclusion of SABR in prospective clinical trials