

# Are All Colorectal Oligometastases Equal?

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## Purpose/Objective(s)

Stereotactic ablative body radiotherapy (SBRT) is offered to patients who have oligometastatic (OM) disease and are not suitable for surgical treatments. OM Colorectal (CRC) cancer has been identified as potentially having worse outcomes compared to other histology types. We hypothesize that tumor biology impacts outcome in OM CRC.

## Materials/Methods

A single institution of prospectively CRC patients treated with SBRT. Patients had <3 mets, in <2 organs on multimodality imaging and exhausted local treatments options. The PS 0-1 SBRT was delivered in 3-8 fractions depending on location. The  $\alpha/\beta = 10$  was used to estimate biological dose. Location of primary and KRAS status was recorded. Progression was defined by imaging criteria as local (within field), locoregional (same organ but outside RT field) or distant. Univariate analysis was performed with log rank tests of Kaplan-Meier curves and cox proportional hazard models. Significant variables on univariate testing were entered into a multivariate cox proportional hazard model.

## Results

Between 05/2013 and 11/2017, 53 CRC metastases cases were treated and 40 patients had adequate data. Eighteen (45%) synchronous, 32 pts had  $\geq 1$  line of chemo. The median age was 68.5 years (range 36-89). Twenty-four patients were male. Primary site of disease was rectum in 18 (45%), left colon in 15 (37.5%) and right colon in 6 (15%). OM sites treated: 16 liver, 15 nodes, 6 lung, and 3 bone. Median BED<sub>10</sub> was 100 Gy (range 48 – 151.2). Median follow up was 14 months (range 2 - 43). In-field local control at 1 year was 83.5% (95% C.I 69.4 – 100). Median PFS for the cohort was 9 months (95% C.I 5.8 – 15.2). The median PFS for

the liver, lung and node metastases were 5, 13, and 19 months respectively. There was a significant difference in PFS based on metastasis location, with lymph node disease being associated with improved PFS (HR 0.25, 95% C.I 0.09 – 0.69,  $p = 0.007$ ; overall log rank,  $p = 0.02$ ). KRAS status was available for 22 patients (55%), 13 wild type and 9 mutant, with the remainder untested. WT KRAS status was associated with improved PFS (HR 0.29, 95% C.I 0.09 – 0.9,  $p = 0.037$ ). No significant difference in PFS was seen when comparing groups by primary site, colon side, age, gender, or whether presentation was with synchronous or metastatic disease. On MVA, metastasis location of lung and lymph node and KRAS WT or unknown status, remain statistically significant predictors of improved PFS.

## Conclusion

In this small cohort, lymph node metastases are associated with improved PFS compared to lung, bone or liver sites independent of KRAS status. KRAS WT is an independent predictor of progression free survival for treatment with SABR. These findings could be used to further refine the selection of CRC OM for treatment with SABR and incorporating systemic treatment. The excellent local control, regardless of KRAS subtype, suggests that OM PFS is driven by locoregional or widespread failure highlighting need for exploring biological differences.

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