3596 **Poster Session**

Homogeneity of pathological response (PR) and histopathological growth pattern (HGP) in resected colorectal liver metastases (CRLM) are associated with favorable survival outcome after surgery.

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Background: Surgical resection of CRLM aims to maximize patient survival. However, recurrence rates remain high post-surgery. We previously reported the prognostic relevance of tumor regression grading (TRG) and HGP of resected CRLM. Several studies reported the association of tumoral heterogeneity with anti-cancer drug resistance and prognosis. This study aims to explore tumoral heterogeneity for TRG and HGP in patients resected for CRLM and its prognostic implication. **Methods:** Tumor homogeneity for PR and HGP was evaluated in 2 independent cohorts. Cohort 1 included 57 patients (159 CRLMs) resected after chemotherapy/bevacizumab (prospective BEV-ONCO trial). Cohort 2 included 221 patients (582 CRLMs) operated after preoperative treatment or not. TRG (1 to 5 according complete to no response), HGP (desmoplastic, pushing, replacement or mixed) were evaluated for each CRLM. Max-TRG (higher TRG among all the CRLM) was used to define PR. Homogenous TRG (TRG-h) and HGP (HGP-h) was defined when all CRLMs had the same TRG or HGP pattern. HGP homogeneous desmoplastic (HGP-hd) was defined when all CRLM had a desmoplastic HGP. TRG-h, HGP-h and HGP-hd were combined into a homogeneity score (H-score: 0 to 3, 1 point given for each parameter and summed-up). Overall survival (OS for both cohorts), progression-free survival (PFS for cohort 1) and time to relapse (TTR for cohort 2) were estimated using the Kaplan–Meier method and compared by log-rank tests. Cox proportional hazard models were used for univariate and multivariate analyses. **Results:** Patient and disease characteristics were comparable in both cohorts excepted for preoperative treatment. In cohort 1, TRG-h and HGP-h were significantly associated with a longer PFS (HR = 0.21; 95CI:0.10-0.43, $p < 0.001$; HR = 0.27; 95CI = 0.14-0.54, $p < 0.001$) and better OS (HR = 0.23; 95CI = 0.07-0.70, $p = 0.010$; HR = 0.32; 95CI = 0.10-0.93, $p = 0.037$). Interestingly, the same significant results were observed in cohort 2 for TTR (TRG-h: HR = 0.60; 95CI = 0.43-0.85, $p = 0.004$; HGP-h: HR = 0.68; 95CI = 0.49-0.94, $p = 0.017$) and OS (TRG-h: HR = 0.51;95CI = 0.33-0.80, $p = 0.003$; HGP-h: HR = 0.63; 95CI = 0.41-0.97, $p = 0.034$). HGP-h reported a significant association with TRG-h, a Max-TRG $< = 3$, the absence of HGP replacement and mixed, a desmoplastic pattern, and the absence of sinusoidal obstruction syndrome in both cohorts. H-score was significantly associated with TTR (score 1-2: HR = 0.57; 95CI = 0.38-0.85, $p = 0.004$; score 3: HR = 0.4; 95CI = 0.24-0.64, $p < 0.001$) and OS (score 3: HR = 0.31; 95CI = 0.15-0.64, $p < 0.001$) in univariate analysis and with OS (HR = 0.74; 95CI = 0.59-0.94, $p = 0.011$) in multivariate analysis (cohort 2). **Conclusions:** TRG-h and HGP-h are strongly associated with patient's survival. H-score could be an easy morphological and prognostic score to assess. Validation studies are needed. Research Sponsor: None.