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NIMG-09. APPLICATION OF FRACTIONAL TUMOR BURDEN  
MAPPING TO MONITOR GLIOBLASTOMA PROGRESSION IN THE  
PHASE 1 TRIAL OF GALLIUM MALTOLATE

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**BACKGROUND:** To address the need for improved glioblastoma (GBM) therapeutics, a Phase 1 trial of gallium maltolate (GaM) for recurrent GBM is ongoing. GaM targets GBM iron metabolism, representing a novel therapeutic mechanism to treat GBM. Monitoring GBM progression is typically accomplished by standard MRI protocols. However, distinguishing progression from treatment effect is often difficult using standard MRI alone; this is especially true for experimental therapeutics. Fractional tumor burden (FTB) mapping incorporates dynamic susceptibility contrast perfusion MRI to generate spatial and quantifiable tumor likelihood estimates. Here, we present three cases from the Phase I trial of GaM to illustrate application of FTB mapping in the clinical trial setting. **METHODS:** Patients enrolled in the GaM trial receive pre-trial baseline imaging and subsequent imaging at 8-week intervals. For each imaging timepoint, an FTB map was created from tissue-validated thresholds of standardized relative cerebral blood volume (sRCBV) in areas of enhancement as determined by pre/post T1 subtraction. **RESULTS:** Case #1 illustrates low FTB-determined tumor probability in a patient with minimal disease who did not progress while on trial for > 33 weeks. Case #2 shows an increase in tumor probability concurrent with radiographic and pathology-confirmed progression soon after initiating GaM. Case #3 demonstrates an increase in tumor probability soon after GaM initiation which preceded an increase in volume by > 10 weeks; GBM progression was confirmed by pathology. **CONCLUSIONS:** The presented cases illustrate the utility of FTB mapping for monitoring GBM progression in the setting of GaM treatment. FTB maps could predict disease progression before standard MRI in some patients. Our experience implicates FTB mapping as an important imaging tool in future GBM clinical trials. The cases add to previous reports that FTB is useful in distinguishing progression from treatment effect with standard treatment regimens.