

Abstracts

BMET-15. TUMOR CELL FREE DNA IN CEREBRAL SPINAL FLUID REFLECTS TREATMENT RESPONSE IN LEPTOMENINGEAL METASTASIS

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Cerebral Spinal Fluid (CSF) from brain tumor patients contains tumor cell free DNA (cfDNA), which may provide a non-invasive and routinely accessible method to obtain tumor genomic information. This "liquid biopsy" method would prove considerably less morbid compared to an open removal of tumor tissue from the brain. The opportunities of cfDNA in CSF

have not been systematically studied in CSF, particularly in relation to how metastatic brain tumor cfDNA may respond to intrathecal therapy. **METHODS:** A patient with metastatic melanoma underwent serial lumbar punctures upon development of leptomeningeal metastases. CSF was obtained for research purposes through an informed consent, IRB approved protocol. The primary melanoma tumor was known to have a BRAF mutation 1799T > A (V600E). cfDNA was isolated from the CSF, and sequenced to confirm the presence of this same tumor-specific BRAF mutation. Droplet Digital PCR (ddPCR) quantified the mutant DNA amount and fraction in CSF. **RESULTS:** The total tumor DNA and mutant DNA fraction in CSF decreased as the patient responded to radiation therapy, correlating with a decrease in his previously debilitating symptoms. When the patient was asymptomatic, the mutant tumor DNA fraction was likewise undetectable. When the patient's symptoms recurred, the tumor cellular and cell free DNA mutation fraction was also elevated, similar to prior pre-treatment levels. **CONCLUSION:** Tumor cellular and cfDNA was found in CSF from a cancer patient with leptomeningeal metastases. Both the mutant fraction and total copies of mutant DNA corresponded with the patient's response to radiation therapy. This non-invasive method may provide a powerful tool for identifying and monitoring the genetic fingerprint of brain metastases.