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CLIA # 05D2111917 CAP # 9441574
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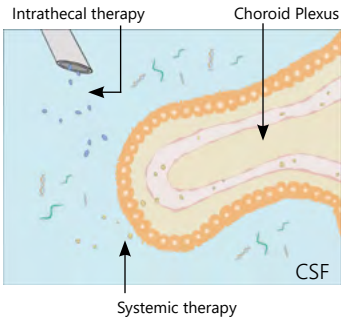
Liquid Trace on CSF

- CSF is a very good source of liquid biopsies in primary and metastatic brain tumors.
- Provides a better yield than plasma for detection of tumor-derived genomic material.
- Alternative to evaluate patients who can't undergo a brain biopsy.
- It enables us to quantify tumor in the CNS (figure 1).



Diagnostic Information

Detect overlapping or concurrent diseases

Measure and quantify tumor mutational burden (TMB) and minimal residual disease (MRD)

Chromosomal abnormalities, including fusions, gene expression and amplification

HPV/EBV/TTV/HTLV-1 detection | T-cell & B-cell clonality | HLA genotyping

Add MGMT methylation analysis for brain tumors to CSF samples when tumor DNA is detected.

Brain Tumors

Patients with CNS-limited tumors have significantly enriched tumor-derived cfDNA/cfRNA in CSF. For example, tumor DNA is easily detected in CSF when the patient has diffuse midline glioma. High grade gliomas such as glioblastoma shed their DNA significantly more than low grade gliomas. CSF cfDNA can also occasionally uncover additional genetic alterations absent in concurrent biopsy specimens, reflecting tumor heterogeneity.

Brain and Leptomeningeal Metastasis

CSF cfDNA/cfRNA may be a useful tool for brain metastases, given the potential use of targeted therapies directed to the CNS metastasis. In patients with metastatic CNS disease, mutations in CSF cfDNA/cfRNA are most concordant with the intracranial process. For example, patients with non-small cell lung cancer (NSCLC) with driver alterations such as epidermal growth factor receptor (EGFR) mutations or anaplastic lymphoma kinase (ALK) rearrangements can receive brain-penetrant tyrosine kinase inhibitors (TKI) as a first line therapy for their brain metastases.

CNS lymphomas

CSF Liquid Trace is useful for diagnosis of primary and secondary CNS lymphomas as well as measurable residual disease (MRD). In addition to the potential detection of specific genomic alterations such as MYD88, T-cell & B-cell clonality (figure 2) can be used as a complementary diagnostic marker for CNS lymphoma. This approach improves the diagnosis of CNS lymphomas and the detection of viral RNA.

References:

1. Beyond the Blood: CSF-Derived cfDNA for Diagnosis and Characterization of CNS Tumors - PMC (nih.gov)
2. Clinical applications of cerebrospinal fluid liquid biopsies in central nervous system tumors - ScienceDirect

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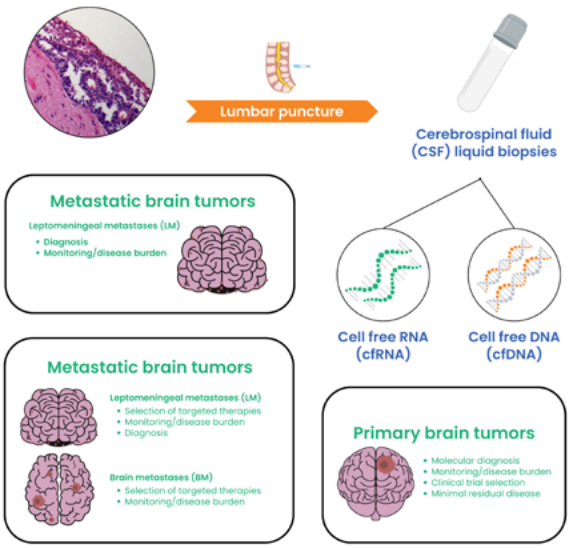
Treatment information

Don't accept partial results!
Missing information will impact treatment decisions.

Testing both tissue and liquid can increase sensitivity.
By testing CSF you may discover mutations not found in the tissue.



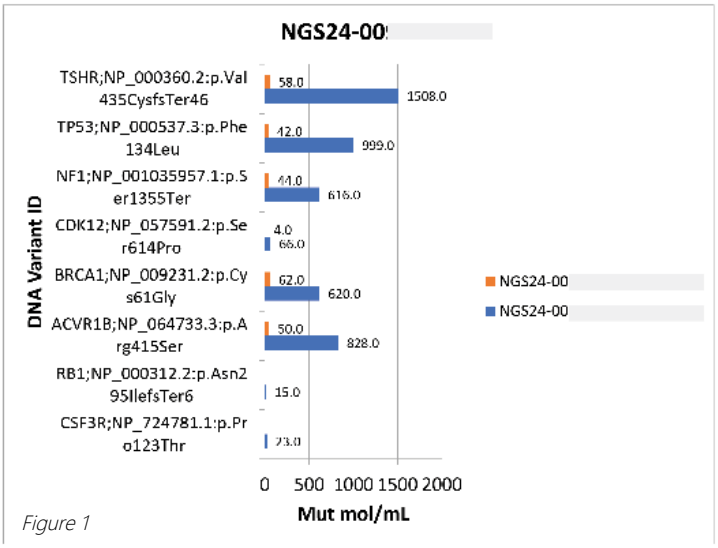


Figure 1

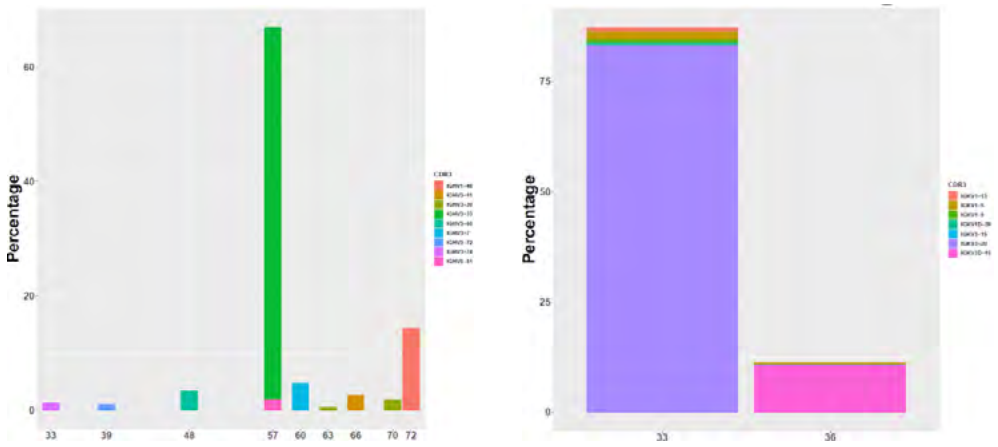


Figure 2 **Clonality in CSF in a lymphoma case.**

What's included:

All relevant genes for targeted therapies are reported

1p/19q Co-deletion and combined +7/-10 chromosomal changes

VHL, CTNNB1, TP53, PTCH, SMO, SUFU, TERTp, PIK3CA, BAP1, IDH1/2, H3 K27M, PTEN, TP53, MYD88 mutations, etc.

NTRK1,2,3 fusions | MYC, MYCN, GLI2, EGFR amplification | CDKN2A/B gene deletion

Monitor disease burden and help select patients who would benefit from further treatment

Clinical trial matching | MGMT methylation analysis