1p/19q Loss of Heterozygosity (LOH) in Oligodendrogliomas

Brain Tumors

Indication for Use: Oligodendrogliomas are distinguished by their remarkable sensitivity to chemotherapy, with approximately 70% of anaplastic oligodendrogliomas responding dramatically to treatment with procarbazine, lomustine, and vincristine (termed PCV)1. There are no clinical or pathologic features that allow accurate prediction of chemotherapeutic response. Oligodendrogliomas are also associated with a longer average patient survival as compared to astrocytic tumors. However, the histologic distinction between oligodendroglioma and astrocytoma is often highly subjective, and there has been significant interobserver variation. There are several studies published in the literature that have shown that allelic loss (loss of heterozygosity) of chromosome arm 1p is a statistically significant and currently the best predictor of chemosensitivity. In addition, combined loss involving chromosome arms 1p and 19q predicts both chemotherapeutic response and longer survival in patients with oligodendrogliomas. Combined allelic loss of chromosome arms 1p and 19q may be considered a molecular signature of oligodendroglioma. Combined 1p19q deletion is present in approximately 70-80% of oligodendroglial tumors and in only 10% of astrocytomas.

Testing Method: 1p19q allelic status is assessed by loss-of-heterozygosity assays in constitutional DNA/tumor DNA pairs by use of microsatellite markers using 3 markers at both 1p and 19q. The 3 markers on 1p are D1S548, D1S1592, and D1S552 (with D1S468, D1S1612, and D1S496 as backup markers) and the 3 markers on 19q are D19S219, D19S412, and PLA2G4C (with D19S606 and D19S1182 as backup). The markers were selected based on heterozygosity score, amplicon size, and ease of interpretation. The backup markers are used if the first line markers at that chromosome arm are uninformative or otherwise ambiguous in their interpretation.

Technical Sensitivity: The presence of >15% non-neoplastic cells in the sample may preclude the detection of allelic loss.

Turnaround Time: 3-5 business days

Sample requirements: The presence of adequate tumor in the material submitted for analysis should be confirmed by a surgical pathologist. If the submitted material for analysis contains less than 85% of tumor, areas of predominant tumor will be macrodissected using a scalpel to trim away non-neoplastic areas.

- Formalin fixed, paraffin-embedded tumor tissue
- 5-6 tissue sections (please include H&E slide and a copy of pathology report)

- Fresh frozen tissue
- A patient's blood sample is needed to establish normal genotype

CPT Codes: 81405

Ship Specimens to:

Henry Ford Center for Precision Diagnostics
Henry Ford Hospital
Clinic Building, K6, Core Lab E-655
2799 W. Grand Blvd.
Detroit, MI 48202