ABSTRACT

World Neurosurg. 2022 Nov 5:S1878-8750(22)01554-6. doi: 10.1016/j.wneu.2022.11.012. Online ahead of print.

Tumor-derived Biomarkers in Liquid Biopsy of Glioblastoma.

Khristov V(1), Lin A(2), Freedman Z(2), Staub J(2), Shenoy G(2), Mrowczynski O(2), Rizk E(2), Zacharia B(2), Connor J(2).

Author information:

(1)Department of Neurosurgery, 500 University Drive, C3810, Hershey, PA 17033, USA. Electronic address: vkhristov@pennstatehealth.psu.edu.
(2)Department of Neurosurgery, 500 University Drive, C3810, Hershey, PA 17033, USA.

There is a pressing clinical need for minimally-invasive liquid biopsies to supplement imaging in the treatment of glioblastoma (GBM). Diagnostic imaging is often difficult to interpret and the medical community is divided on distinguishing between complete response, partial response, stable disease, and progressive disease. A minimally-invasive liquid biopsy would supplement imaging and clinical findings and has the capacity to be helpful in several ways: 1) diagnosis, 2) selection of patients for specific treatments, 3) tracking of treatment response, 4) prognostic value. The "liquid biome" is the combination of biological fluids including blood, urine, and cerebrospinal fluid (CSF) that contain small amounts of tumor cells, DNA/RNA coding material, peptides, and metabolites. Within the liquid biome two broad categories of biomarkers can exist: tumor-derived which can be directly traced to the tumor and tumor-associated which can be traced back to the response of the body to disease. While tumor-associated biomarkers are promising liquid biopsy candidates, recent advances in biomarker enrichment and detection have allowed to concentrate on a new class of biomarker - tumor-derived biomarkers. This review focuses on making the distinction between the two biomarker categories and highlights promising new directions in the field.

Copyright © 2022. Published by Elsevier Inc.

DOI: 10.1016/j.wneu.2022.11.012 PMID: 36347463