Journal of Clinical Chemistry and Laboratory Medicine

OPEN ACCESS Freely available online

Perspective

Role of Liquid Biopsy in Treatment of Cancer

Jessica Nicole *

Department of Pathology, Cagayan State University, Tuguegarao City, Philippines

ABOUT THE STUDY

When a patient has a severe tumor or any symptoms, a doctor may perform a tissue biopsy, which is a process that collects cells for the further analysis. A test that evaluates a sample of blood for cancer cells from a tumor circulating in the blood or fragments of DNA from tumor cells in the blood. A liquid biopsy could assist in the detection of cancer at an early stage. It can also be used to aid in treatment planning, as well as to determine how well treatment is working and whether cancer has returned. The ability to take many blood samples over time may also enable doctors in establishing what molecular alterations are occurring in a tumor. Cancerous cells release DNA into the bloodstream, which is referred to as circulating tumor DNA (ctDNA).

Cancer cells that are growing or necrotic have been proven to produce specific biomarkers into the circulation, which can be retrieved in a venous blood sample. It is comprised of a variety of biological matrices, involving circulating tumor cells (CTCs), cell free nucleic acids, exosomes, and tumor-educated platelets. It should represent a better perspective of tumor heterogeneity and allow for real-time monitoring of cancer evolution, in addition to becoming a non- or minimally invasive technique. Blood tests are often more acceptable in clinical settings than invasive bone marrow aspirations. Most CTC assays now use epithelial markers, in which CTCs present at the Epithelial–Mesenchymal Transition (EMT). The scope of liquid biopsy has been broadened by circulating microRNAs (miRNA), and tumor-derived blood platelets appear to be promising blood-based indicators. Cancer mutations in ctDNA are similar to those identified in standard tumor samples, making them useful as molecular biomarkers for disease tracking. CTCs are cancer cells that are shed from primary or secondary tumor sites, circulate into the circulatory system, and cause distant metastases. CTCs are extremely uncommon, with levels as low as 1 CTC per 106–107 leukocytes in early stage illnesses. A liquid biopsy test that may detect epidermal growth factor receptor (EGFR) gene mutations, which are seen in 35 % of non-small cell lung cancer patients, would aid clinicians in selecting the best treatment for the appropriate patient at the right time. Most tumors contain several genetic alterations, which may or may not be present in all areas of the tumor. Liquid biopsies, on the other hand, have a better probability of identifying these genetic changes than tissue samples retrieved for biopsy. Liquid biopsy is indeed not entirely non-invasive because it requires needle puncture of a peripheral vein; yet, it is sometimes referred to as non-invasive in the same way that diagnostic imaging requiring intravenous contrast. The half-life of ctDNA was discovered to be roughly 2 hours. CTC and circulating nucleic acid molecular and functional analysis can be applied as companion diagnostics to improve therapy assessment and provide insight into therapy-induced cancer cell selection. CTCs offer a great approach to molecular cancer detection and therapy alternatives, and their study is common in cancer research. Several approaches have enhanced their detection and isolation based on their qualities, employing their physical differences from leukocytes including antigen expression. Although much of the early research on liquid biopsies focused on lung, breast, and prostate cancers, now this method is likely to have a wide range of applications on different cancers. Although certain genetic and/or epigenetic profiles or cell surface markers obtained from liquid biopsies can be used to identify a specific cancer type they cannot be used to comprehensively localized disease. Liquid biopsy has the advantage of being a noninvasive test with little consequences as compared to tissue biopsy using percutaneous or endoscopic techniques. Liquid biopsy can also be used to overcome intra tumor heterogeneity. When compared with percutaneous tissue biopsy, liquid biopsy is also less resource intensive.

CONCLUSION

Liquid biopsy is a more adaptable and accurate method for clinical surveillance than serum protein–based indicators such as a-fetoprotein, carcino embryonic antigen, and CA 19–9. The analysis of blood for CTCs or cell-free nucleic acids, also known as "liquid biopsy," has opened up new possibilities for cancer diagnostics, such as early tumor detection, improved risk assessment and staging, as well as early relapse detection and tumor evolution monitoring in the context of cancer therapies. Whether liquid biopsies become a leading diagnostic tool or not will be determined by their ability to enhance progression and survival rates in upcoming future.

Correspondence to: Jessica Nicole, Department of Pathology, Cagayan State University, Tuguegarao City, Philippines, E-mail: nicolejess@hotmail.com

Received: 03-Mar-2022, Manuscript No. JCCLM-22-16877; **Editor assigned:** 07-Mar-2022, PreQC No. JCCLM-22-16877 (PQ); **Reviewed:** 21-Mar-2022, QC No. JCCLM-22-16877; **Revised:** 28-Mar-2022, Manuscript No. JCCLM-22-16877 (R); **Published:** 04-Apr-2022, DOI:10.35248/JCCLM.22.05.215

Citation: Nicole J (2022) Role of Liquid Biopsy in Treatment of Cancer. J Clin Chem Lab Med. 5:215