Mini Review
Volume 8:6, 2023

Journal of Cancer Clinical Trials

ISSN: 2577-0535 Open Access

Revolutionizing Early Detection: Liquid Biopsy Applications in Colorectal Cancer

Hunter Ewan*

Department of Hematology and Oncology, University of South China, Hengyang, Hunan, China

Abstract

This article explores key components of quality-ensured environments in translational cancer research and their significance in driving meaningful advancements. Establishing a robust research governance framework is essential to promote quality in translational cancer research. Research governance encompasses policies, procedures and ethical guidelines that govern the conduct of research. This framework ensures compliance with regulatory requirements, protects patient rights and welfare and upholds the highest ethical standards. Implementing a strong governance structure sets the foundation for research excellence and fosters trust among stakeholders. Adopting standardized protocols and procedures is crucial for maintaining research quality. Consistent methodologies and practices enable comparability of results across studies and institutions. Standardization encompasses aspects such as sample collection, processing, storage, data analysis and reporting.

Keywords: Sample collection • Data analysis • Cancer

Introduction

Colorectal Cancer (CRC) is a significant global health concern, often diagnosed at advanced stages when treatment options are limited. The evolving landscape of cancer diagnostics has given rise to liquid biopsy as a promising tool for early detection and monitoring of colorectal cancer. This article explores the revolutionary applications of liquid biopsy in the context of colorectal cancer, shedding light on its potential to transform the way we approach detection and management [1].

Literature Review

Traditional methods of diagnosing colorectal cancer, such as colonoscopies and tissue biopsies, have played crucial roles in identifying the disease. However, they come with certain limitations, including invasiveness and the inability to capture the dynamic nature of cancer progression comprehensively. Liquid biopsy, a non-invasive alternative, involves analyzing components like circulating tumor DNA (ctDNA), circulating tumor cells (CTCs), and other biomarkers present in bodily fluids such as blood. Colorectal cancers shed fragments of DNA into the bloodstream, carrying specific mutations indicative of the disease. Liquid biopsy, specifically the analysis of ctDNA, allows for the detection of these tumor-specific mutations, providing a sensitive and specific method for early cancer identification. Liquid biopsy's ability to detect trace amounts of ctDNA enables the monitoring of minimal residual disease post-surgery or treatment. This is particularly valuable in assessing the effectiveness of interventions and identifying potential recurrence at an early, more treatable stage [2].

***Address for Correspondence:** Hunter Ewan, Department of Hematology and Oncology, University of South China, Hengyang, Hunan, China, E-mail: hunterewan@gmail.com*

Received: 01 November, 2023, Manuscript No. Jcct-23-121383; **Editor assigned:** 03 November, 2023, PreQC No. P-121383; **Reviewed:** 15 November, 2023, QC No. Q-121383; **Revised:** 22 November, 2023, Manuscript No. R-121383; **Published:** 28 November, 2023, DOI: 10.37421/2577-0535.2023.8.225

Discussion

Liquid biopsy can aid in identifying actionable mutations, such as RAS or BRAF mutations, guiding clinicians in the selection of targeted therapies. This personalized approach improves treatment outcomes by tailoring interventions to the specific genomic profile of the tumor. Regular liquid biopsy assessments during treatment provide real-time insights into the tumor's response to therapy. Adjustments to treatment plans can be made promptly based on the evolving genetic landscape, optimizing therapeutic strategies. Liquid biopsy has the potential to revolutionize colorectal cancer screening for high-risk individuals. Regular monitoring of ctDNA can offer an efficient, non-invasive method for early detection, facilitating timely interventions and improving overall survival rates. Liquid biopsy can complement existing screening methods, such as colonoscopies and fecal occult blood tests (FOBT), by providing additional layers of information. This multi-modal approach enhances the sensitivity and specificity of colorectal cancer screening [3,4].

Liquid biopsy offers a non-invasive method for detecting tumor-specific mutations. Unlike traditional tissue biopsies, which require invasive procedures, liquid biopsy involves a simple blood draw. This accessibility makes it an attractive option for regular monitoring and early detection. Liquid biopsy techniques, such as next-generation sequencing (NGS), enable the identification of specific mutations with high sensitivity and specificity. The ability to detect trace amounts of ctDNA shed by cancer cells into the bloodstream allows for the identification of mutations that may not be readily apparent through traditional methods. Tumor-specific mutations detected through liquid biopsy serve as early indicators of cancer presence. By identifying these mutations at a molecular level, clinicians can diagnose CRC at an earlier and potentially more treatable stage, improving overall patient outcomes. Ensuring the highest levels of sensitivity and specificity is crucial for the reliability of liquid biopsy in colorectal cancer detection. Ongoing research focuses on refining techniques to enhance the accuracy of ctDNA detection. Standardizing liquid biopsy procedures and making them widely accessible is vital for its integration into routine clinical practice. Efforts are underway to establish guidelines and protocols for the consistent application of liquid biopsy across healthcare settings [5,6].

Conclusion

The application of liquid biopsy in colorectal cancer heralds a new era in early detection and monitoring. Its non-invasive nature, ability to capture tumor dynamics, and potential for guiding treatment decisions make it a

valuable tool in the fight against colorectal cancer. As research progresses and technology advances, the integration of liquid biopsy into routine screening and management protocols holds great promise for improving outcomes and transforming the colorectal cancer care continuum.

Acknowledgement

None.

Conflict of Interest

No potential conflict of interest was reported by the authors.

References

1. Almatroudi, Ahmad. "The incidence rate of colorectal cancer in Saudi Arabia: An observational descriptive epidemiological analysis." *Int J Gen Med* (2020): 977-990.
2. Byun, Ju-Young, Seok-Jun Yoon, In-Hwan Oh, Young Ae Kim and Hye-Young Seo, et al. "Economic burden of colorectal cancer in Korea." *JPMPH* 47 (2014): 84.
3. Chen, Simiao, Zhong Cao, Klaus Prettner and Michael Kuhn, et al. "Estimates and projections of the global economic cost of 29 cancers in 204 countries and territories from 2020 to 2050." *JAMA Oncol* 9 (2023): 465-472.
4. Madeira, Catarina, Francisco Santos, Christine Kubiak and Jacques Demotes, et al. "Transparency and accuracy in funding investigator-initiated clinical trials: A systematic search in clinical trials databases." *BMJ Open* 9 2019): e023394.
5. Keum, NaNa and Edward Giovannucci. "Global burden of colorectal cancer: Emerging trends, risk factors and prevention strategies." *Nat Rev Gastroenterol Hepatol* 16 (2019): 713-732.
6. Siegel, Rebecca L., Christopher Dennis Jakubowski, Stacey A. Fedewa and Anjee Davis, et al. "Colorectal cancer in the young: Epidemiology, prevention, management." *Am Soc Clin Oncol Educ* 40 (2020): e75-e88.

How to cite this article: Ewan, Hunter. "Revolutionizing Early Detection: Liquid Biopsy Applications in Colorectal Cancer." *J Cancer Clin Trials* 8 (2023): 225.