Biomarkers in Cancer Therapy

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Editorial

Oncology decision-making procedures no longer rely on linear and uncomplicated workflows; rather, with the availability of an ever-growing number of biomarkers, these flowcharts resemble elaborate trees with several branches, increasing the complexity of solid tumour therapy recommendations. In certain oncology procedures, currently employed molecular biomarkers can be prognostic or predictive. Patients can be classified based on their risk of illness progression or mortality using prognostic biomarkers, which can then be used to alter therapy intensity for particular patients. Microsatellite Instability (MSI) is a predictive biomarker in stage II Colorectal Cancer (CRC); If MSI is discovered, a reduced treatment intensity of adjuvant chemotherapy can be utilised due to the essentially improved prognosis of these individuals.

Cancer is now one of the top causes of morbidity and mortality in the globe, and it is the second greatest cause of death. Cancer claimed the lives of 8.8 million people in 2015, and the number of new cases is anticipated to climb by 70% in the next two decades. It is well established that early cancer detection benefits the patient by improving the chances of a successful treatment. As a result, it is vital to encourage non-invasive procedures that allow for early cancer detection. Liquid biopsy methods have sparked a lot of attention in recent years for early cancer diagnosis, predicting recurring disease, and assessing therapy resistance mechanisms. Liquid biopsy is an appealing, new, and minimally invasive source of tumor-derived biomarkers (cells, proteins, vesicles, and nucleic acids) that are lost into the bloodstream and other body fluids like saliva or urine.

The clinical application of liquid biopsy holds promise for developing customised medicine methods by allowing researchers to determine the molecular landscape of the underlying malignancy and metastases in order to control cancer in real time. Importantly, incorporating liquid biopsy into standard clinical practise will aid in gaining a better understanding of tumoral heterogeneity both at the time of diagnosis and as the tumour progresses. Furthermore, circulating biomarkers will be essential for diagnosing cancer before any clinical symptoms or radiological evidence appear, as well as detecting and tracking minimal residual illness.

Saliva has recently been shown to have diagnostic and prognostic significance as a promising new and revolutionary liquid biopsy, according to mounting data. Saliva is a complex bodily fluid that comprises proteins, DNA, mRNA, microRNAs (miRNA/miR), metabolites, and bacteria. Saliva, as a diagnostic tool, has a number of biochemical advantages over blood and tissue, including non-invasiveness, ease of storage, cost-effectiveness, and dynamic availability for monitoring with less patient discomfort. Saliva-based molecular diagnostics reflects the physiological circumstances of the body, allowing oral and systemic health and disease to be monitored. The term "salivaomics" was coined by the scientific community in response to ongoing developments in saliva research. Salivary-based techniques have been developed to find possible biomarkers in the six salivaomics, which include the genome, microbiome, epigenome, transcriptome, proteome, and metabolome. Changes in these molecules' concentrations in the saliva can be used for disease diagnosis, risk assessment, prognosis, and monitoring. In this regard, numerous studies have identified various salivary biomarkers in head and neck malignancies as well as tumours beyond the mouth cavity.

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