NEXT GENERATION SEQUENCING PREDICTS 5' TRNA-VAL-CAC-2-1 HALF AS A POTENTIAL NON-INVASIVE BIOMARKER FOR ORAL SQUAMOUS CELL CARCINOMA

[1]DHAHBI J, [2]BHARAT K, [3]MCCLATCHEY T

Department of Medical Education, School of Medicine, California University of Science & Medicine, San Bernardino, CA, United States.

Abstract - Circulating small-noncoding RNAs are gaining clinical interest as biofluid-based noninvasive markers for diseases, especially cancer. One particular group of small-noncoding RNAs with high biomarker potential comprises derivatives of transfer RNA (tRNA) and YRNA. We and others have reported changes in circulating levels of specific tRNA- and YRNA-derivatives in association with a diagnosis of cancer. In this study, we used next generation sequencing technology to assess tRNA- and YRNA-derivatives in both serum and tumor tissue from patients with oral squamous cell carcinoma (OSCC) in search for potential markers of this cancer reported to kill approximately one person per hour according to The Oral Cancer Foundation. We identified several 5' tRNA halves and 5' YRNA fragments that were differentially expressed in serum and/or tumor tissue. Furtherbioinformatics analysis of gene function identified a particular marker, 5' tRNA-Val-CAC-2-1 half, which is involved in the regulation of certain cell cycle mechanisms. Our findings underscore the potential of circulating small-noncoding RNAs as noninvasive markers for cancer screening and diagnosis. More studies are needed to further elucidate the role of 5' tRNA-Val-CAC-2-1 half in carcinogenesis. Larger cohorts are needed to adequately validate and develop 5' tRNA-Val-CAC-2-1 half as noninvasive circulating cancer biomarker and/or target for novel anticancer therapies.

Keywords - Cancer Biomarkers; Next Generation Sequencing; Cancer; Circulating Small-Noncoding RNAs; Liquid Biopsy; Cancer Screening; tRNA Halves; YRNA Fragments