

Tumour Necrosis Factor- α as a Biomarker in Oral Leukoplakia and Oral Squamous Cell Carcinoma

Bedadyuti Mohanty*

Department of Biotechnology, SRM Institute of Science & Technology, Chennai, India

Editorial

Oral cavity squamous cell carcinoma (OSCC) are 95% contributor of all oral cavity carcinomas around the world. Though the malignancy is prevalent, especially in developing, the attention regarding the diagnosis or treatment has not been satisfactory when compared to other malignancies like lung, breast, or colon cancer.

The diagnosis has only proved to be effective in the later stages of this disease may be due to ignorance or inaccessibility of medical care.

However, recently some of the studies have shown certain diagnostic and therapeutic techniques for OSCC which have developed novel molecular targets for uncovering signal pathway dominance and advanced early cancer detection. Early detection of this disease will produce more effective results and will cause minimal morbidity [1].

Human saliva has been reliably used for detection of many diseases as it is composed of various proteins, peptides, hormones and enzymes. Cytokines (tumor necrosis factor alpha (TNF- α), interleukins (IL)-6 and -8, vascular endothelial growth factor (VEGF), IL -4 and -10.) have already been used as biomarkers for detection of oral carcinomas. Salivary cytokines such as Interleukin-8 (IL-8), Interleukin-6 (IL-6) and TNF- α are considered as effective in pathogenesis of oral carcinomas and are potent biomarkers for this disease.

TNF- α has been utilized in the pathogenesis of precancerous and cancerous oral squamous cells along with other autoimmune, and inflammatory diseases such as systemic lupus erythematosus (SLE), rheumatoid arthritis, and psoriasis. Moreover, TNF- α have also been proved to be crucial mediator in inflammatory and immunologic reactions. TNF- α is cytotoxic for cancer (tumor) cells. It inhibits the development of tumor and necrosis by restricting proliferation, migration and survival of these cells. TNF- α is a double-edged sword being the pro and anti- tumorigenic.

A recent study have confirmed the effectiveness of saliva as biomarker estimation and in evaluation of TNF- α as a potential prognostic marker [2]. In another study, Juretic et al. have confirmed the high levels of IL-6 and TNF- α (in ELISA), confirming their diagnostic and prognostic significance in potentially premalignant lesions and conditions in OSCC [3]. Nelson et al. suggested the increase of IL-6, IL-8, IL-1 and TNF- α level in oral neoplastic lesions and OSCC because of their distinguished feature in pro-angiogenesis and pro-inflammation. Such features contribute to the diagnostic value [4].

TNF- α involves caspase cascades, transcription factors, nuclear factor kappa B (NF- κ B) and activating protein 1 (AP-1), which are involved in inflammation, signal regulation, cell growth and death [5]. IL-8, IL-6 and TNF- α proved to be overexpressed in OSCC, as investigated by the University of California, Los Angeles (UCLA) Collaborative Oral Fluid Diagnostic Research Centre, the pioneer center for the studies conducted in this field [6].

In conclusion, the present study reveals that salivary TNF- α can be used as a prognostic biomarker of OSCC. The increased level of saliva TNF- α in severe dysplasia patients can also monitor the malignant transformation of leukoplakia to OSCC.

References

1. Bedadyuti Mohanty . "Biomarkers in Early Detection of Oral Cancer." *J Mol Biomark Diagn* 11 (2020): 427.
2. Geta Deepthi, Satya R. Nandan, Pavan G Kulkarni. "Salivary tumour Necrosis Factor- α as a biomarker in oral leukoplakia and oral squamous cell carcinoma." *Asian Pacific J Cancer Prevent* 20 (2019): 2087.
3. Mirna Juretić, Robert Cerović, Belušić M. Gobić and Ivana Brekalo, et al. "Salivary levels of TNF- α and IL-6 in patients with oral premalignant and malignant lesions." *Folia Biol* 59 (2013): 99-102.
4. Nelson L. Rhodus, Vu Ho, Craig S. Miller and Sandra Myers, et al. "NF- κ B dependent cytokine levels in saliva of patients with oral preneoplastic lesions and oral squamous cell carcinoma." *Cancer Detect Prev* 29 (2005):42-45.
5. Kevin G Leong and Aly Karsan "Signaling pathways mediated by tumor necrosis factor α Histol." *Histopathol* 15 (2000): 1303-1325.
6. Maie A. R. St. John, Yang Li, Xiaofeng Zhou and Paul Denny, et al. "Interleukin 6 and interleukin 8 as potential biomarkers for oral cavity and oropharyngeal squamous cell carcinoma." *Arch Otolaryngol Head Neck Surg* 130 (2004): 929-935.

How to cite this article: Mohanty B. "Tumour Necrosis Factor- α as a Biomarker in Oral Leukoplakia and Oral Squamous Cell Carcinoma." *J Mol Biomark Diagn* 11 (2020): 436. DOI: 10.37421/jmbd.2020.11.436

*Address for Correspondence: Mohanty B, Department of Biotechnology, SRM Institute of Science & Technology, Chennai, India, E-mail: bedadyutimohanty7@gmail.com

Copyright: © 2020 Mohanty B. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.