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Mini Review

NF-KB - A Key Transcription Factor in Progression of Oral Cancer

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Abstract

Oral cancer is a leading cancer in south East Asia and India due to extensive use of tobacco and alcohol. Tobacco and alcohol induced release of inflammatory mediators activate NF-KB, a key ubiquitous transcription factor involved in tumor progression by activation of inflammatory mediators. This article brief about the role of NF-KB transcription factor in progression of oral cancer.

Keywords: *Oral Cancer; NF-KB Transcription Factor; Tobacco; Alcohol*

Introduction

Oral cancer killing mankind around the world. In South East Asia India has the largest group around 70% of oral cancer load globally. About 2.25 million oral cancer patients are in India. Around 1.2 million new oral cancer patients are every year adding and around 0.8 million annually die. WHO told Indian oral cancer patients increase five times in next decade. Global oral cancer burden 2012 reports 369,200 new oral cancer cases and 145,328 of oral cancer patients die worldwide annually. According to GLOBOCAN 2018 new lip and oral cancer cases of about 354,864 cases reported worldwide and 177,384 oral cancer patients die every year worldwide [1]. Etiological factors for oral cancer are tobacco use in the form of chewing or smoking, alcohol, viruses such as HPV and EBV.

NF-KB: Transcription factor in progression of oral cancer

External environmental factors such as tobacco, alcohol, viruses activate IL-1, TNF-α and COX-2 inflammatory mediators and LPS (Lipopolysaccharide) activate NF-KB a key transcription factor. NF-KB a key transcription factor control more than 500 genes present in cytosol of an each cell. NF-KB transcription factor activation in immune cells involved in activation of immune cells involved in development of immunity and inflammation [2,8-12]. Generalized activation of NF-KB involved in cells involved in chronic inflammation and tumor progression. Inflammatory mediators activated by activation of NF-KB, a key transcription factor involved in cell proliferation by (Cyclin D, Cyclin E), cell survival by (BCL-2, BCL-XL), angiogenesis by (IL-8, COX-2, VEGF, HIF-1α), genomic instability by (ROS, RNS, AID, iNOS), immune modulation by (IL-4, IL-5, IL-10, IL-13, TGF-β), invasion and metastasis by (Mmp's 2,9, UPA). NF-KB along with STAT-3 transcription factor activated by inflammatory mediators such as L-6, EGF, FGF and PDGF involved in cell proliferation and cell survival [2-7].

NF-KB a key transcription factor antagonize P53 by ROS, RNS, iNOS, AID (Activation induced cytidine deaminase) enzyme expressed by NF-KB transcription factor [12-23]. NF-KB a key transcription factor acts as a key therapeutic target, which is involved in all stages of oral cancer progression eventually improve the overall prognosis in oral cancer patients.

Conclusion

Understanding of NF-KB a key transcription factor and its activation, mechanisms of actions and its dual role in cancer helps in future therapeutic application and prognostic marker.

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