

Association between periodontal disease and prostate cancer



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Abstract

Objective: The aim of this literature review was to study the underlying mechanisms of the association between periodontal disease and prostate cancer.

Methods: This study was literature review study, pubmed searching was used to find scientific article about association of periodontal disease and prostate cancer.

Results: Direct correlation between periodontal disease and prostate

cancer is still unclear. It was hypothesized that microorganisms involved in chronic periodontitis may directly induce mutations in the tumor-suppressor genes and proto-oncogenes or alter the signalling pathways that in turn stimulates cancer growth.

Conclusion: Periodontal disease may associate to prostate cancer by mutation induction in tumor-suppressor genes.

Keywords: Mutation induction of tumor suppressor genes, Periodontal disease, Prostate cancer

Cite this Article: Aji NRAS, Herawati D. 2019. Association between periodontal disease and prostate cancer. *Journal of Dentomaxillofacial Science* 4(1): 1-2. DOI:10.15562/jdmfs.v4i1.755

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Introduction

Prostate cancer (PC) is the most common cancer affecting man. The incidence of PC is increasing worldwide. Obesity and aging are two factors that accelerate the increase of PC incidence.¹

Periodontal disease (PD) is apparently associated with oral bacterial dysbiosis and systemic immune responses, but the role of oral pathogenic bacteria in carcinogenesis remains unclear.² Also, a direct correlation between PD and PC is still unclear and controversial. Periodontal disease was also significantly associated with an increased risk of prostate cancer in men and with cancer of the corpus uteri in women.

Methods

This study is literature review study, pubmed searching was used to find scientific article about association of periodontal disease and prostate cancer.

Results

Possible association between periodontal disease and prostate cancer

PD is apparently associated with oral bacterial dysbiosis and systemic immune responses, but the role of oral pathogenic bacteria in carcinogenesis remains unclear.

PD is the most-common inflammatory disease, and many of its known risk factors-sex, age, smoking, obesity, hypertension and diabetes mellitus

are also considered to be risk factors for systemic cancer. There may exist shared underlying genetic factors that increase the risk of both periodontal disease and cancers.^{3,4}

Discussion

Pathway of possible mechanism between periodontal disease and prostate cancer

Shared chronic inflammation and systemic endothelial dysfunction, which are also key mechanisms of carcinogenesis. The invasion of oral pathological bacteria, especially porphyromonas gingivalis, may induce traumatic injury and irritation of the epithelium and mucosa, and play a role in subsequent cancer progression.

Increases in systemic inflammation resulting from periodontal disease may, therefore, offer one pathway by which this oral disease increases the risk of various cancers. Other mechanisms, including a compromised immunologic system and carcinogenic byproducts of periodontal pathogens, have also been proposed as possible links.^{5,6} Whether periodontal disease directly increases cancer risk or there are shared genetic and/or environmental etiological factors is debatable. Some of the genes consistently associated with aggressive periodontitis (COX2, CDKN2B) are also associated with cancer, which suggests shared genetic susceptibility between the two diseases. In a recent genome-based study conducted in patients with chronic periodontal disease, several genes were found to be upregulated

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Received: 27 June 2018
Revised: 19 August 2018
Accepted: 27 February 2019
Available online 1 April 2019

in periodontal pocket transcriptomes.³

The most widely expressed mechanism of the association is the link between chronic systemic inflammation and cancer. Chronic infections, irritation and inflammation increase the risk of cancer.²

Conclusion

Periodontal disease may associate to prostate cancer by mutation induction in tumor-suppressor genes and by inflammation link.

Acknowledgment

The authors would like to thank to Dr. drg. Ahmad Syaify, Sp.Perio(K) and drg. Sri Pramestri Lastianny, MS., Sp.Perio(K) for the support, facility and permission to write this paper.

Conflict of Interest

The authors report no conflict of interest.

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