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Risk and periodontitis: An insight into risk indicators and modifiers

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Abstract

Risk factors are certain condition that increases the chance of developing periodontal disease. Identifying those factors lend a hand to guide the patient for both prevention and treatment of the disease. Habits like smoking and alcohol consumption are the part of risk modifiers along with this unhealthy conditions like diabetes mellitus, osteoporosis, obesity etc. are also included. All those risk factors are modifiable and management of this condition directly or indirectly are important to sort out the periodontal diseases. The present review throws light into the above mentioned risk modifiers and those indicators of risk that can increase the likelihood of developing periodontal disease.

Keywords: Risk modifiers, periodontitis, risk indicators

Introduction

Risk factors are defined as an event which is correlated with an increased rate of developing disease. It is crucial to distinguish that these factors are connected with a disease but are not exact etiology of the disease. Risk factors are classified as modifiable and non modifiable risk factors. Smoking, diabetes mellitus, Psychological stress and micro-organisms are some of the modifiable risk factors and on the other hand genetic factors, host response, osteoporosis, ageing, certain systemic diseases etc. Are non-modifiable risk factors. Smoking is the best known modifiable risk factor which have a high potential for developing and worsening the periodontal disease [1, 2, 3].

Many cross sectional studies shows that risk indicators as probable risk factor which is not authenticated through longitudinal studies [3]. This consists of osteoporosis, HIV infection, infrequent dental visit, drug intake associated periodontal disorders etc. [2, 4].

Risk Modifiers

Smoking

Periodontal deterioration was found to be greater among smokers than non-smokers [3]. With increasing smoking, increased attachment loss and alveolar bone loss is observed. Former smokers undergone less attachment loss than current smokers but more attachment loss than never smokers [1].

Clinical signs of periodontal inflammation is lesser in case of smokers than non-smokers but high incidence of periodontal collapse [3]. Smoking causes reduced gingival bleeding and inflammation, this is because the nicotine which is the main content of cigarettes induce local vasoconstriction, reduce blood flow, edema and clinical signs of inflammation. It has been put forward that the reduction in bleeding point outs an underlying altered immune response and that this may explain the increase in alveolar bone and loss of clinical attachment. Also results after periodontal therapy in smokers are less when compared to non-smokers [1].

Diabetes mellitus

Diabetes mellitus (DM) is a clinical syndrome, characterized by hyperglycemia, caused by inherited and/or acquired deficiency in insulin production and/or action [5].

Diabetes mellitus and periodontitis have bidirectional relation [6].

As diabetes can be controlled it is considered to be modifiable. Periodontitis occurs significantly more frequently in diabetics than in non-diabetics, with no differences in gender or age [5]. Patients with diabetics can have gingivitis, clinical attachment loss and alveolar bone loss [1].

There are a way more mechanism in which the hyperglycemic condition makes the patient's periodontal status poor. In diabetic patient the alternation of collagen metabolism is the most consolidated mechanism. Periodontitis causes an increase in pro-inflammatory cytokines both locally and systemically. Two chemical mediators linking periodontitis to diabetes are IL-6 and TNF [3].

Psychological stress

It is evident that people with stress, anxious or depression have pathetic oral hygiene [3]. Rate of incidence for developing clinical attachment loss and alveolar bone loss is more in people with stress. Increased cortisol secretion in stressed condition has an overall negative impact on the effectiveness of the immune response, that creates a unevenness between host and parasites and, gradually leading to periodontal degradation [7]. Poor oral hygiene is another factor that influences the oral health and contribute to periodontal disease.

Micro organisms

Some members of the periodontal micro-flora are considered putative pathogens for the initiation and accelerates state of periodontal diseases [1]. Studies reveals that bacterial plaque are the main causative agent to build up gingival inflammation [2]. Certain bacteria creates biofilms which survives on the tooth, interact with host cells, that leads to release of inflammatory mediators, enters the host's immune defenses, resist the effects of drugs, and exert various pathogenic effects in an appropriate microenvironment [8]. Among the various micro-organisms that colonize the mouth, *Porphyromonas gingivalis*, *Tannerella forsythia* and *Actinobacillus actinomycetemcomitans*, have been implicated as causative agent of Periodontitis [1, 2]. *Bacteroides forsythus*, *Prevotella intermedia*, *Peptostreptococcus micros* and *Fusobacterium* are also related to progression of the disease [8]. Reduction of this pathogenic microflora has been found to be strongly associated with improved periodontal health [3].

Risk Indicators

Osteoporosis

Osteoporosis is a condition seen in post-menopausal women characterised by reduced bone mineral density leading to increased susceptibility to fracture. After menopause estrogen production get minimised which is connected with a decrease in bone mineral density [3]. Periodontitis and osteoporosis share a number of risk factors (e.g.: aging, smoking, certain diseases, medication that interfere with healing) [2]. Women with osteoporosis have high incidence for developing periodontitis resulting in alveolar bone loss and eventually tooth loss [2, 9].

HIV/AIDS

HIV infection causes immunosuppression that can lead to a way for various other infections [3]. Periodontal diseases are entirely within the scope of the possible consequences of HIV. These are multifactorial chronic infectious diseases that classically occur between the ages of 35 and 40 and are part of the reason for comorbidities [10].

HIV infection is associated with certain forms of periodontal

disease, also worsens the pre-existing periodontal conditions [2]. Initiation and progression of periodontal disease varies in case of HIV patients which depends on the immune status and oral hygiene maintenance [3].

Infrequent dental visits

Patients with regular dental visits reveals better periodontal status when compared with those who are not regular with this. With age rate of tooth loss and alveolar bone loss also accelerates but to an extent it can be reduced or controlled with frequent dental visits. Certain studies shows that people with regular dental checkup holds more healthy number of teeth but at the same time it is noticed that dental have no effect on plaque deposits or gingival inflammation [3].

Drugs

Drug Induced gingival overgrowth is a clinical condition associated with intake of anti-epileptics like phenytoin, calcium channel blockers like Nifedipine and immunosuppressants like cyclosporin. Gingival overgrowth associated with drugs favours plaque accumulation that predisposes to periodontal disease [4].

Conclusion

Considering the role of risk elements in pathogenesis of periodontitis, dentist show oversee the entire systemic health along with oral health in taking measures to prevent periodontal disease. Since periodontitis is a multifactorial disease, effective disease management needs thorough understanding of the above mentioned risk factors.

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