



The Association of Periodontitis in a Hypertensive Patient: A Case Report

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Abstract

Hypertension and periodontitis are common conditions globally, significantly impacting cardiovascular disease (CVD) complications. The prevalence of hypertension tends to increase with poor periodontal health, potentially influencing blood pressure control. Although risk factors like older age, male gender, smoking, obesity, diabetes, low socioeconomic status, and poor education are commonly associated with this relationship, recent evidence suggests that the link between periodontitis and hypertension is independent of these common factors and may indeed be causative, the main mechanisms involved in this association is low-grade systemic inflammation and redox imbalance. Pathogenetic events such as neutrophil dysfunction, imbalance in T cell subtypes, oral bacteria dysbiosis, hyperexpression of proinflammatory genes, and increased sympathetic outflow contribute to the connection between periodontitis and hypertension. Moreover, emerging findings indicate that shared genetic bases may shape the immune profile associated with this clinical phenotype, providing a basis for potential therapeutic and preventive strategies of public health significance.

Keywords: Hypertension; Smoking; Cardiovascular Diseases

Introduction

Cardiovascular diseases are the most common noncommunicable diseases (NCD) globally and represent a leading cause of death worldwide. Several modifiable conditions and unmodifiable traits contribute to the development of CVD, and hypertension is among the major ones [1].

It appears that periodontitis may be a modifiable non-traditional risk factor for CVD, with observational evidence that periodontitis increases the risk for future CVDs independent of traditional risk factors such as smoking and obesity [2,3].

The interplay between the bacterial burden and host response is the most plausible biological mechanism linking periodontitis to several chronic systemic diseases, such as diabetes mellitus, CVDs, and neurological diseases such as Alzheimer [2,4,5].

Hypertension is the leading cause of CVD and related mortality in Africa in the coming few years. The WHO survey in 20 African countries shows that the prevalence of hypertension is 19.3 to 39.6% [6,7].

Blood pressure values are an important predictor of cardiovascular risk [8,9].

A meta-analysis and a systematic review examining the association between periodontitis and hypertension, assessed its prevalence in individuals aged 16 years and above from 30 prospective and retrospective studies published between 2003 and 2018 [10], the results revealed a higher prevalence of hypertension among individuals diagnosed with periodontitis (ranging from 7% to 77%) compared to those without the condition (ranging from 4% to 70%) [10,11].

Case Description

Male patient, 42 years old complaining from masticatory problem due to missing teeth, patient reported increased blood pressure values despite regularly taking his medications. The average of two successive readings for the systolic and diastolic blood pressure was 170/95 using sphygmomanometer, clinical examination revealed missing teeth number 16,24,25,26,27,31,37,41,44,45,46 and 47.

Results

The assessment of clinical parameters was done using the Williams graduated periodontal probe at the time of the visit. The results included a plaque percentage of 50%, bleeding on probing at 39%, and a mean clinical attachment level of 2.3. The maximum recorded clinical attachment level was 9, and 48 sites had a clinical attachment loss equal to or exceeding 5 mm. Regarding probing pocket depth, the average measurement was 1.8, with the highest recorded value being 9, and there were 48 sites with a reading equal to or greater than 4 mm and the number of teeth lost was twelve.

A periapical radiograph was done to determine the grade of the periodontal disease, finally the patient is diagnosed with generalized periodontitis stage IV grade C.



Discussion

Periodontitis is a chronic inflammatory disease of infectious origins that has drawn increasing attention as a risk factor to develop hypertension and cardiovascular disease (CVD) [12,13].

The prevalence of moderate or severe periodontitis is estimated by current epidemiological studies to be between 15 and 30 % in most adult human populations, and even higher in some recent studies. Additionally, despite the reported advancements in plaque control and resulting decline in mild disease, the prevalence of severe periodontitis hasn't necessarily decreased in a manner that is comparable [14].

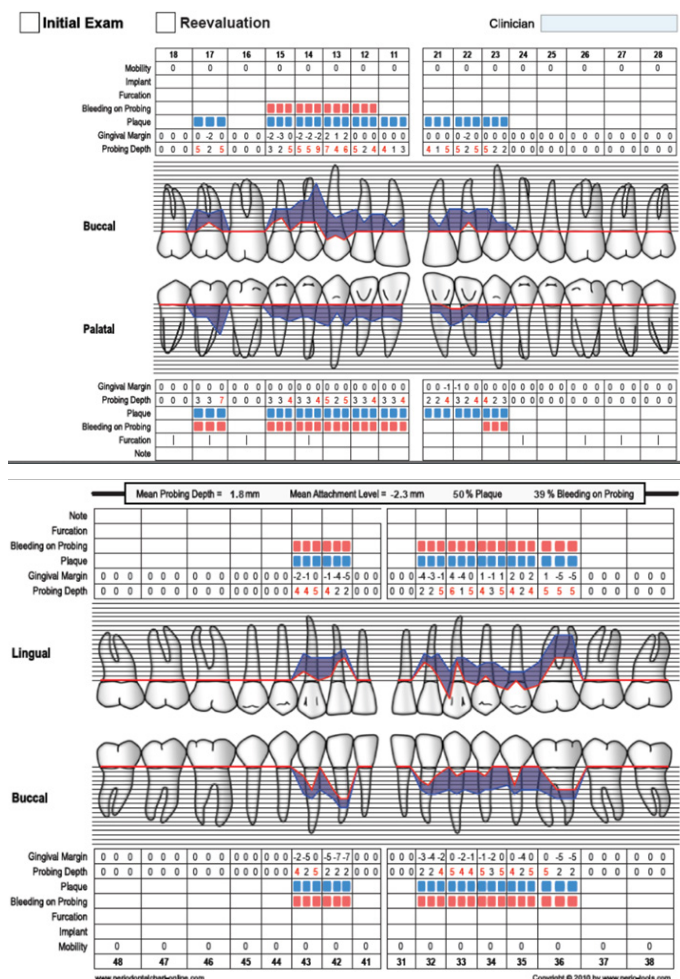
Machado, *et al.* 2020 examined the impact of periodontitis on the susceptibility to arterial hypertension. The study had 1057 participants (mean age 60.9 ± 16.3; with 532 taking antihypertensive medications), and the progression of periodontitis was evaluated based on clinical attachment loss (CAL). The results indicated that the risk of arterial hypertension varied across different stages of periodontitis (I, II, and III), recording at 1.72 (95% CI 1.10-2.57) in stage I, 2.60 (95% CI 1.82-3.72) in stage II, and 2.20 (95% CI 1.57-3.08) in stage III. Notably, all correlations remained statistically significant even after adjusting for age, BMI, and smoking [15].

Conclusions

Our data highlights those patients with periodontitis, particularly those with higher levels of gingival inflammation and deep periodontal pockets, have the highest risk for having both SBP and DBP.

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