

Arterial Hypertension, Morbid Obesity and Periodontal Diseases in Patients who are Candidates for Bariatric Surgery: Exploring the Role of Inflammation

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ABSTRACT

Arterial hypertension and periodontal diseases in morbidly obese patients who are candidates for bariatric surgery may represent major risk factor for the development of several comorbidities. These patients exhibit a chronic inflammatory state caused by inflammatory cytokines. Vascular inflammation consists of the release of inflammatory mediators that increase vascular permeability; promote changes in the cytoskeleton of endothelial cells, which resulting in an imbalance between vasodilation and vasoconstriction. In this process, vasoconstriction becomes more intense, causing an increase in blood pressure and the C-reactive protein plays an important role. Clinical and experimental evidence suggests that the association between periodontitis and arterial hypertension can be mediated by hypertension itself, which causes microcirculatory changes in the gingival tissue, leading to ischemia, increased inflammation and/or alteration of the dental biofilm components. Thus, patients with arterial hypertension, morbid obese and periodontitis have a high risk of developing cardiovascular diseases.

Keywords: Periodontitis; Neuroendocrine; Dyslipidemia; Adipokines

DESCRIPTION

Obesity is a chronic inflammatory disease and defined as a state of abnormal or excessive accumulation of adipose tissue that leads to health risks. It is often a major risk factor for the development of several non-communicable diseases, such as cardiovascular disease, dyslipidemia, arterial hypertension, type II diabetes mellitus and premature death [1].

There is scientific evidence that arterial hypertension is related to vascular inflammation and endothelial dysfunction [2]. Vascular inflammation occurs through the inflammatory mediators that increase vascular permeability and changes in the cytoskeleton of endothelial cells, which in turn leading to an imbalance between vasodilation and vasoconstriction. The active involvement of inflammatory mediators' advance vasoconstriction is more intense, inducing an increase in blood pressure. Further, the C-reactive protein plays an important role in this process [3].

The arterial hypertension and obesity are affected by similar mechanism, such as eating habits, glomerular filtration, and metabolic and neuroendocrine disorders. Hypertension is a result of a complex relationship of multiple neurohormonal

factors. The physiologic mechanisms of this condition involve hormones, cytokines, adipokines, and gut peptides implicated in its development [4].

Oral diseases may have systemic effects. Periodontal disease has been suggested as a risk factor for stroke, coronary heart disease, peripheral arterial disease, and hypertension [5]. Inflammatory state leads to abdominal obesity, dyslipidemia, insulin resistance and periodontal disease. The adipose tissue secretes numerous immunomodulatory factors as adipokines, which play a role in regulating vascular and metabolic biology. Metabolites abnormal levels from adipose tissue also adipose tissues secrete cytokines such as interleukin 6 (IL-6) and tumor necrosis factor alpha (TNF α) [6] the last one is associated with inflammation of the periodontium, leading to the destruction of alveolar bone in periodontal tissues [7]. A pathophysiological has linked of periodontitis to hypertension and the causal relation has been considered to be both direct and indirect [5].

Considering that periodontitis and arterial hypertension share common risk factors, such as obesity, the confounding factors must be controlled in assessing the association of outcomes. A meta-analysis demonstrated that periodontal disease is associated with

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an increased risk of high blood pressure, although their findings were highly heterogeneous, and there was no clarity regarding the causal direction in the association of these conditions [2]. These findings were confirmed in another systematic review concerning an increased prevalence of periodontitis in patients with hypertension [8].

The patients affected by morbid obesity diagnosed with arterial hypertension are at high risk of developing cardiovascular diseases based on the accumulation of abdominal fat, gender, and age. Also, they have a higher prevalence of periodontitis and greater disease severity than morbidly obese people without arterial hypertension [3].

CONCLUSION

We may highlight that obesity, hypertension and periodontal disease are significant healthcare and exhibit the necessity to investments in prevention and health education, multidisciplinary, comprehensive and equitable treatment of morbidly obese patients who are candidates to bariatric surgery, especially those in vulnerable situations.

COMPETING INTERESTS

There are no competing interests associated with the manuscript.

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