Medical Xpress

Gum disease linked with higher risk of hypertension

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People with gum disease (periodontitis) have a greater likelihood of high blood pressure (hypertension), according to a study published today in *Cardiovascular Research*, a journal of the European Society of

Cardiology (ESC).

Senior author Professor Francesco D'Aiuto of UCL Eastman Dental Institute, UK, said: "We observed a linear association—the more severe periodontitis is, the higher the probability of hypertension. The findings suggest that patients with gum disease should be informed of their risk and given advice on lifestyle changes to prevent high blood pressure such as exercise and a healthy diet."

High blood pressure affects 30-45% of adults and is the leading global cause of premature death,[2] while periodontitis affects more than 50% of the world's population. Hypertension is the main preventable cause of cardiovascular disease, and periodontitis has been linked with increased risk of heart attack and stroke.

"Hypertension could be the driver of heart attack and stroke in patients with periodontitis," said Professor D'Aiuto. "Previous research suggests a connection between periodontitis and hypertension and that dental treatment might improve blood pressure, but to date the findings are inconclusive."

This study compiled the best available evidence to examine the odds of high blood pressure in patients with moderate and severe gum disease. A total of 81 studies from 26 countries were included in the meta-analysis.

Moderate-to-severe periodontitis was associated with a 22% raised risk for hypertension, while severe periodontitis was linked with 49% higher odds of hypertension. Lead author Dr. Eva Munoz Aguilera of UCL Eastman Dental Institute said: "We observed a positive linear relationship, with the hazard of high blood pressure rising as gum disease became more severe."

Average arterial blood pressure was higher in patients with periodontitis

compared to those without. This amounted to 4.5 mmHg higher systolic and 2 mmHg higher diastolic blood pressures. "The differences are not negligible," said Dr. Munoz Aguilera. "An average 5 mmHg blood pressure rise would be linked to a 25% increased risk of death from heart attack or stroke."

Just 5 out of 12 interventional studies included in the review showed a reduction in blood pressure following gum treatment. The changes occurred even in people with healthy blood pressure levels.

Professor D'Aiuto said: "There seems to be a continuum between oral health and blood pressure which exists in healthy and diseased states. The evidence suggesting periodontal therapy could reduce blood pressure remains inconclusive. In nearly all intervention studies, blood pressure was not the primary outcome. Randomised trials are needed to determine the impact of periodontal therapy on blood pressure."

Regarding potential reasons for the connection between the conditions, gum disease and the associated oral bacteria lead to inflammation throughout the body, which affects blood vessel function. Common genetic susceptibility could also play a role, along with shared risk factors such as smoking and obesity.

Professor D'Aiuto said: "In many countries throughout the world, oral health is not checked regularly, and gum disease remains untreated for many years. The hypothesis is that this situation of oral and systemic inflammation and response to bacteria accumulates on top of existing risk factors."

He noted that the study investigated gum disease as a potential risk factor for hypertension, but the reverse could also be true. "Further research is needed to examine whether patients with high blood pressure have a raised likelihood of gum disease. It seems prudent to provide oral

health advice to those with hypertension," he said.

More information: Aguilera EM, Suvan J, Buti J, et al. Periodontitis is associated with hypertension. A systematic review and meta-analysis. *Cardiovasc Res*. 2019.DOI: 10.1093/cvr/cvz201

Provided by European Society of Cardiology

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