

## **Periodontal Disease and Ischemic Heart Disease. Association**

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Cardiovascular diseases are the most common cause of death in Spain, and specifically, myocardial infarction is the leading cause of death in men. In the vast majority of cases, ischemic heart disease, comprising angina pectoris, myocardial infarction and sudden death, is the result of coronary atherosclerosis which reduces blood flow to the myocardial wall, and its usual histopathological manifestation is atherosclerotic plaque.

Atherosclerotic plaques can rupture or erode, enabling contact between their inner components and the circulating blood. Factors that influence the rupture of the atherosclerotic plaque include the presence of active inflammatory phenomena, which facilitate the accumulation of inflammatory cells in the area. Increasing importance is being placed on the role of distant chronic inflammatory processes. Periodontal disease is among the most studied, and the evidence available along these lines is increasingly consistent, although some issues still remain unclear.

Periodontal diseases are caused by bacteria that have the ability to generate significant patient immune responses, thereby inducing the release of great amounts of inflammatory mediators that spread through the bloodstream, potentially having systemic implications.

### **Association between periodontal and cardiovascular diseases. Scientific evidence**

The fact that periodontitis is among the most common human diseases, and that cardiovascular diseases are a leading cause of death in the developed world, has sparked interest among the scientific community about a possible link between the two pathologies. The recently cited inflammatory aetiology of myocardial infarction and production of the mediators described in periodontitis enables us to form a plausible working hypothesis.

In the last decade, a great deal of scientific information has surfaced, establishing this possible relationship. The point of greatest interest in this regard is whether periodontitis can be proven to be an independent risk factor in the aetiology of ischemic heart disease, as are hypertension, hypercholesterolemia or tobacco smoking.

Both observational and interventional studies have been conducted to establish this relationship, and although additional evidence is needed for periodontitis to be considered an independent risk factor, there is currently little doubt that this link exists. What still remains to be proven is whether the significant associations established in the literature are causal, or if common aetiological factors exist for both diseases. Although meta-analyses study rather heterogeneous groups, they have established an estimated mean risk of between 1 and 1.5, being more significant for young individuals with aggressive periodontitis. An important step in this direction will occur when interventional studies can establish the protective role of periodontal treatment in the future risk of infarction. Study design complexity and ethical principles are an impediment in this regard.

### **Cardiovascular and periodontal diseases and lifestyle**

Recently disclosed information supports the idea that the relationship between cardiovascular disease and periodontal disease should not be considered only from the perspective of whether one influences the aetiology of the other, but rather with the idea in mind that both may have common causal factors, which may relate to lifestyle.

The fact that these circumstances involved in the metabolic syndrome, affected by both genetics and environment, are related to three diseases: stroke, diabetes and periodontitis, and that common circumstances can be recognised for all three, makes establishing causal relationships difficult. It is similarly difficult to tell whether diabetes and periodontitis, for example, or periodontitis and stroke, favour each other or if they are diseases which coexist in one particular patient, resulting from common organic alterations.

From a clinical standpoint, establishing this causal link may not be as important as understanding that certain situations, such as obesity, diabetes and periodontitis, can be jointly prevented by instilling healthy habits that lead to a lifestyle change. This way we will also be contributing to cardiovascular health.

## Final thoughts

Regardless of the degree of evidence in establishing a causal link between periodontal and cardiovascular diseases, it seems reasonable that periodontal health maintenance not only should be directed toward its impact in the oral cavity, but we must also consider its systemic implications.

This idea is likely to change in the future. Now we must realise that both diseases form part of the same physiopathologic concept, and are associated to lifestyle-related risk factors, such as diabetes, obesity, physical inactivity and neglect of health. When you take time to exercise or take care of your mouth, not only are you thinking to improve your image or have beautiful smile, but rather you are more likely to live a longer, healthier and better quality life.

Cardiovascular prevention protocols should ideally include oral care as part of their recommendations. Maybe someday we will be able to find oral care on a list of heart-healthy habits. Until then, we will need to settle for the awareness among primary care physicians and cardiologists that an individual's mouth is important for his or her overall health.

The role of oral health specialists should include not only treating the general population, but also specifically pinpointing patients who are at risk for suffering cardiovascular diseases. This new approach in dentistry will contribute to strengthening dentists' medical involvement, thereby increasing their social and scientific prestige and making it a more useful profession.

## References

1. Sociedad Española de Periodoncia y Osteointegración y Sociedad Española de Cardiología. Patología periodontal y cardiovascular. Su interrelación e implicaciones para la salud. Madrid: Panamericana; 2010.

2. Friedewald VE, Kornman KS, Beck JD, Genco R, Goldfine A, Libby P, Offenbacher S, Ridker PM, Van Dyke TE, Roberts WC; The American Journal of Cardiology and Journal of Periodontology Editors' Consensus: periodontitis and atherosclerotic cardiovascular disease. *Am J Cardiol.* 2009;104: 59-68.
3. Friedewald VE, Kornman KS, Beck JD, Genco R, Goldfine A, Libby P, Offenbacher S, Ridker PM, Van Dyke TE, Roberts WC. The American Journal of Cardiology and Journal of Periodontology Editors' Consensus: periodontitis and atherosclerotic cardiovascular disease. *J Periodontol.* 2009; 80: 1021-32.
4. De Teresa E. Fisiopatología de la cardiopatía isquémica. Sociedad Española de Periodoncia y Osteointegración y Sociedad Española de Cardiología, editores. *Patología periodontal y cardiovascular. Su interrelación e implicaciones para la salud.* Panamericana 2010, pp 31-43.
5. Isasti G, Molina MJ, Jimenez-Navarro MF. Inflamación y cardiopatía isquémica. Sociedad Española de Periodoncia y Osteointegración y Sociedad Española de Cardiología, editores. *Patología periodontal y cardiovascular. Su interrelación e implicaciones para la salud.* Panamericana 2010, pp 45-52.
6. Herrera D, Iniesta M, Serrano J. Etiología infecciosa y patogenia de las enfermedades periodontales. Mediadores inflamatorios. Sociedad Española de Periodoncia y Osteointegración y Sociedad Española de Cardiología, editores. *Patología periodontal y cardiovascular. Su interrelación e implicaciones para la salud.* Panamericana 2010, pp 53-70.
7. Sanz-Ruiz R, Sanz M, Figuero E, Fernández-Avilés F. Enfermedad periodontal e infarto agudo de miocardio. Evidencia de la asociación. Sociedad Española de Periodoncia y Osteointegración y Sociedad Española de Cardiología, editores. *Patología periodontal y cardiovascular. Su interrelación e implicaciones para la salud.* Panamericana 2010, pp 71-86.
8. De Teresa C, Noguerol B. Enfermedades cardiovasculares, enfermedades periodontales y estilo de vida. Sociedad Española de Periodoncia y Osteointegración y Sociedad Española de Cardiología, editores. *Patología*

periodontal y cardiovascular. Su interrelación e implicaciones para la salud. Panamericana 2010, pp 199-213.

9. Saito T, Shimazaki Y. Metabolic disorders related to obesity and periodontal disease. Periodontology 2000. 2007; 43: 254-266.