

Inflammation and Periodontal Diseases: A Reappraisal

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A recent search (Google News) for media articles published on inflammation identified more than 9,000 stories in a 4-week period in 2008. These stories included:

- Obesity-related inflammation boosts heart risks (*The Washington Post*, United States, May 6, 2008).
- Gum disease, inflammation risky for pregnant women (Reuters U.K., United Kingdom, May 7, 2008).
- Birth size linked to weight gain and inflammation (Reuters, United States, April 29, 2008).

This interest by the media and public is being fueled by an explosion of scientific knowledge on inflammation and chronic diseases of aging. For example, a recent PubMed search for scientific publications on “inflammation” published within a 12-month period prior to May 1, 2008 returned >16,500 papers. During the same period, 161 papers were published on “periodontal disease” and “inflammation.”

Recognition of the research advances and importance of inflammatory mechanisms in essentially all of the chronic diseases of aging, including periodontal diseases, led the American Academy of Periodontology to convene a conference on January 29 and 30, 2008 in Boston titled, “Inflammation and Periodontal Diseases: A Reappraisal.” This conference brought together opinion leaders in several major diseases and in the inflammatory mechanisms that seem to underlie and unify all of these diseases.

Inflammation is now known to play a critical role in diseases that are not usually classified as inflammatory diseases, such as cardiovascular disease and Alzheimer’s disease. Although this conclusion is the result of many years of research, much of the knowledge has crystallized into coherent concepts only very recently. The Boston conference brought together many of the people who have led the new thinking relative to inflammation. Much of this new knowledge and the new concepts are captured in outstanding short overview papers in this supplement to the *Journal of Periodontology*.

The organizers of the conference perceived, correctly as it turned out, that the timing was right to discuss how periodontal disease fits with the new

knowledge of inflammation. The conference included 2 full days of presentations and discussions in which the new knowledge about inflammation and knowledge about periodontal diseases were integrated to focus on how this information may be used to better manage periodontal diseases and other diseases that may be affected by periodontitis. This material is very nicely captured in multiple papers that are included in the supplement.

Readers will find remarkable new information in each section of the supplement. The conference and supplement were organized to address the following questions:

1. What is inflammation, and what determines the variation in expression of inflammation among individuals?
2. What is the role of inflammatory mechanisms in common chronic diseases, including diabetes, Alzheimer’s disease, and cardiovascular disease?
3. What is the role of inflammatory mechanisms in periodontal disease, including bone and connective tissue destruction; regulation of inflammatory mediators; and host bacterial interactions in general?

Although some of the thinking captured in these papers represents revolutionary changes in our understanding of chronic diseases of aging, the papers were written to communicate this information to a broad audience.

Among the information you will find in various papers, be sure to draw your attention to the following highlights:

- Inflammatory mechanisms appear to be critical factors in the development and progression of most of the chronic diseases of aging.
- Diet and genetic variations interact to control differences in inflammation among individuals.
- Inflammation is actively resolved by specific mechanisms that help to restore homeostasis, and there are ways to augment these processes.
- Although our genes do not change, the control of how certain genes are expressed in specific tissues can change substantially throughout our lives by factors such as diet, stress, and bacterial accumulations.
- Visceral fat accumulations around one’s waist substantially increase the inflammatory burden on the body.

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- Overexpression of inflammation may be one of the key aspects of aging that influences and links different diseases in different individuals.

This conference and supplement were possible only because of the foresight of the officers of the Academy, the tremendous support and commitment of the Colgate-Palmolive Company, the hard work of the AAP staff, and the participation by the speakers and the attendees. We also thank Dr. Robert Genco, who assumed the difficult task

of developing a short summary of the conference and the discussions that were held as part of each session.

We hope you enjoy reading and thinking about where periodontology fits in the new knowledge about inflammation.

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