Systemic antibody responses to oral bacteria with aging

March 17 2016

Today at the 45th Annual Meeting & Exhibition of the American Association for Dental Research, researcher Jeffrey Ebersole, University of Kentucky, Lexington, USA, will present a study titled "Systemic Antibody Responses to Oral Bacteria with Aging." The AADR Annual Meeting is being held in conjunction with the 40th Annual Meeting of the Canadian Association for Dental Research.

Substantial evidence has demonstrated that adaptive immune responses are affected by aging, specifically focused on "newly acquired" responses in naïve aged individuals. However, responses to oral bacteria in aging provide a different set of conditions, in which the host has a pre-existing immune response to bacteria that have colonized the individual's oral cavity over many decades. This investigation examined the characteristics of serum antibody in a cohort of human subjects related to age, oral health, and specific bacterial burden in the oral cavity.

Serum immunoglobulin G (IgG)and IgG subclass antibody responses to oral bacteria were evaluated by ELISA from 422 subjects (age range: 21years old to 80 years old): 61 healthy; 65 subjects with gingivitis; and 296 subjects with periodontitis. Subgingival plaque samples were evaluated for specific bacteria using quantitative polymerase chain reaction. A significant positive correlation was observed across the population with aging and antibody to Porphyromonas gingivalis (P. gingivalis), Treponema denticola and Tannerella forsythia, but not to Aggregatibacter actinomycetemcomitans. IgG antibody responses to oral pathogens decreased with age in healthy subjects, remained constantly

elevated in subjects with periodontitis and increased with age in subjects with gingivitis. Additionally, the level of antibody to P. gingivalis was positively correlated with the specific microbial burden and appeared to be unaffected by aging. Interesting differences were noted in aging related to gender with males showing some increase in antibody levels, not observed in females. Finally, aging effects on IgG subclass antibody distribution was noted, with both IgG2 and IgG3 increasing with aging, with IgG2 levels contributing the largest proportion of total IgG antibody, and IgG4 antibody to P. gingivalis actually increased, particularly in subjects with periodontitis.

These findings suggest that aging alterations in antibody responses to oral bacteria that have "primed" the immune system are different than responses to naïve antigens and indicate that the affects related to gender, subclass, and microbial burden may have some role in disease changes with aging.

More information: This is a summary of oral presentation #0189, "Systemic Antibody Responses to Oral Bacteria with Aging," which will be presented on Thursday, March 17, 2016, 8:30 a.m. - 8:45 a.m. at the Los Angeles Convention Center, room #408A.

Provided by International & American Associations for Dental Research