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The pathway to Alzheimer's disease

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The pathway to Alzheimer's disease (AD) follows a route which many chronic diseases utilize: microbes make biofilms that activate the innate immune system which ultimately leads to tissue destruction. The primary microbes involved are very likely dental and Lyme spirochetes. Both have been found by PCR; additionally, Lyme spirochetes have been cultured from affected brains. Both are known to make biofilms, and these biofilms have receptor sites for Toll-like receptor 2 (TLR2). In its activity as a first responder, TLR2 makes use of the myeloid differentiation 88 pathway to kill invading microorganisms. This pathway generates NFκB and TNFα and these molecules in turn appear not only to be responsible for destruction of neurons, but also to be responsible, in large part, for the creation of beta amyloid. (Aβ) The Aβ has been previously thought to be primary in the AD pathogenesis, but it turns out to be antimicrobial. Neither the TLR2 nor the Aβ can penetrate the biofilms and thus they destroy the surrounding tissue as "innocent bystanders". The recent findings of intracellular, in contrast to extracellular, biofilms complicate the system further. Adding to the pathway are factors that contribute to the disease process and make AD worse. Among these are medications such as haloperidol and chemicals such as nicotine and beta methyl aminoalanine which are known to be biofilm dispersers. Diabetes is known to make AD worse; the likely mechanism for this is an increase in biofilms caused by hyper osmolality in the serum. Thus, making or breaking (dispersing) biofilms eventuates in more biofilms and more disease. Only a few factors ameliorate AD: low levels of vitamins D3 and K2 upregulate TLR2 causing more disease activity. Higher serum levels do the opposite. Vitamin E and L-serine are quorum sensing inhibitors; and, when present, aid in preventing biofilm formation. Last, if the microbes are killed (by penicillin) before they reach the brain or before they make biofilms, there would likely be no disease at all.

Biography

Herbert B Allen specialties include dermatology and dermatopathology, skin pathology and fungal infections. He is a graduate of Johns Hopkins University School of Medicine. He has served on the boards of the American Society of Dermatology and the American College of Physicians and has published over 30 scientific articles in the fields of dermatology and dermatopathology. He is the author of '*Keywords*' in Dermatology, a book on the language of dermatology. He's board-certified with the American Board of Dermatology and the American Board of Pathology. He is currently an Emeritus Professor in the department of Dermatology where he served as chair of the department for 14 years.

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