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The dental-systemic disease ‘connection conundrum’: Improved management through understanding

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The concept of focal infection has been revisited with mounting evidence that chronic dental infections such as periodontal disease align with vasculopathy (atheroma) and hypertrophic cardiomyopathy. Paradoxically, heart disease as measured by an irreversible ischaemic cardiac ‘event’ is not strongly clinically related to focal chronic dental infections. Further, this paradox is also extended to neurology whereby dementia, although relating to vasculopathy, is not strongly positively clinically correlated with inflammatory dental disease. A plausible rationale to explain these paradoxes is presented whereby proinflammatory cytokines and bacterial lipopolysaccharide are pictured as mediators of cellular homeostasis, maintaining a prosurvival, and cytoprotective environment. Dysregulation of the immune system forms an important driver in determining imbalance in homeostasis during chronic inflammation leading to vasculopathy and cardiac pathology such as hypertrophy. Excessive prosurvival stimulus often times via cancer-related cascades reflects the dysregulated homeostasis observed in the pathology of chronic inflammation. By moderating dysregulated homeostasis agents such as rebamipide, resveratrol and amlexanox may target such pathologies. Notably, amlexanox, an immunomodulatory drug used to manage aphthous ulcers may be repurposed in this respect as its mechanism of action includes targeting key kinase enzymes involved in innate immunity that align with dysregulated inflammation. A strategy is therefore proposed for restoring imbalance in homeostasis seen in chronic dental inflammatory conditions to help prevent systemic comorbidities.

Biography

John Loudon obtained his undergraduate training in dentistry and went on to complete a PhD at Sydney University in biochemistry. He then completed post-doctoral studies in Japan, Tsukuba science city, USA, Roswell Park Cancer Inst. in renin-angiotensin molecular biology. He has obtained specialist Certification and a Fellowship within the field of Oral & Maxillofacial Pathology at The Ohio State University. He has written over ten significant single author articles in addition to contributing towards numerous co-authored works and is an invited reviewer. He maintains a focused interest in cardiac and vascular disease, cancer and infectious diseases in addition to dental sciences research.

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