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Intracellular bacteria cause chronic disease by altering the immune response

Patients with chronic diseases have elevated 1,25-dihydroxyvitamin-D and low 25-hydroxyvitamin-D. The absence of hypercalcemia, hypercalciuria, elevated parathyroid hormone, and chronic kidney disease indicates extra-renal production of excess 1,25-dihydroxyvitamin-D. In normal immune function, extra-renal 1alpha-hydroxylase (CYP27B1) catalyzes 25-hydroxyvitamin-D to 1,25-dihydroxyvitamin-D in immune cells, leading to transcription of antimicrobial peptides via the vitamin D receptor (VDR). CYP27B1 transcription in macrophages is regulated by cytokines (e.g., Interferon-y). L-form bacteria invade immune cells and use strategies to avoid phagocytosis. Parasitization of macrophages by these pathogens is the stimulus for persistent production of cytokines which induce CYP27B1 activity and excess 1,25-dihydroxyvitamin-D production. Down-regulation of the VDR by intracellular bacteria interferes with 1,25-dihydroxyvitamin-D production regulatory processes and thus, prevents transcription of antimicrobial peptides to allow bacterial persistence. Bacterial interference with enzymatic traffic patterns allows production of excess 1,25-dihydroxyvitamin-D and prevents normal 1,25-dihydroxyvitamin-D functions which inhibit the expression of inflammatory cytokines. In summary, non-resolving inflammation associated with many common chronic diseases is caused by survival strategies of intracellular bacteria and is evidenced by elevated 1,25-dihydroxyvitamin-D and depleted 25-hydroxyvitamin-D as markers of an infectious disease process.

Biography

Meg Mangin, R.N. is the founder and Executive Director of Chronic Illness Recovery. She has served on a National Institutes of Health State of the Science panel and an NIH Data, Safety and Monitoring Board. Ms. Mangin has presented at numerous conferences, including Days of Molecular Medicine in Karolinska, Sweden, the International Conference on Autoimmunity in Porto, Portugal, the American Society of Hypertension Annual Meeting, Enabling Future Pharma, Perspectives in Rheumatic Diseases, Immunology Summit, ILADS and 8th Global Summit on Microbiology & Infectious Diseases. She is the co-author of a chapter in the medical textbook Vitamin D: New Research and the lead author of a ground-breaking review article on vitamin D, inflammation and infection published in the October 2014 issue of Inflammation Research.

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