



Editorial

Chronic inflammation: The enemy within

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“The enemy is within, and within stays within, and we can't get out of within.”

--Arthur Miller

Man is engaged in war of attrition against microbes and other inimical environmental agents. Engagement of the enemy involves a highly evolved immune system with a staggering level of complexity. It is not hard to imagine then, that a dodgy defense system can turn upon the body. Compared to a large scale assault upon an army of invading bacilli, where for instance, the liver might cause the blood C-reactive protein (CRP) to go up a thousand-fold; in chronic inflammation, elevations in CRP are rather more modest. Yet “just” a three-fold rise CRP can, over time, triple the risk of heart disease, not to say other illnesses. Indeed inflammation seems to be the delicate web that binds together cardiovascular morbidity with a number of “non-traditional” risk factors such as COPD.

Aging is an ill-understood phenomenon that all metabolizing cells undergo against a backdrop of multiple genetic and epigenetic events. Ubiquitous to aging is a chronic, low-grade inflammation—“inflammaging”—that is fuelled by the stockpiling of products that cells' cannot rid themselves of. Such “self-debris” by activating innate immunity, should properly result in physiological repair; but instead,

triggers chronic maladaptive responses. The survival of redundant senescent cells seem also to drive aging by secreting pro-inflammatory cytokines that permeate the cellular milieu and alter the function of neighboring cells.

An important but hitherto unrecognized player in the complex interplay of cellular process appears to be the role of the microbiome. Microbes abound within the gut, skin, urinary and the respiratory tract. Dysbiosis in the gut fosters disease and the role of proximate causation of dysbiosis—antibiotics, infections and environmental factors—has become a subject of great interest. It has relatively recently been realized that the gut bacteria—and there are a hundred trillion of these—can act systemically; and it is conceivable that other organisms—including fungi, parasites and viruses (especially bacteriophages)—can do so as well. In addition, ageing apparently results in a decline in the gut's ability to sequester microbes, and might also foster a change in the gut microbiome with resultant chronic low-grade inflammation.

With Medicine's increasing ascendancy over external agents, attention is increasingly being drawn to the enemy within. It would seem that the key to man's immortality lies in his ability to handle chronic inflammation.