STRESS, INFLAMMATION, AND AGING

Nicolas Rohleder

Department of Psychology
Brandeis University,
Inflammation

Stress

Aging

Inflammation

local

systemic

sepsis

Chronic low-grade Inflammation

Infection

(time (hours to days)

(YEARS)

NORMAL

DYSREGULATED

IL-6

CRP

Cortisol

IL-6 & CRP
Chronic low-grade Inflammation

**Effects of chronic low-grade inflammation**

- triggers local inflammatory responses throughout the body
  - Stimulates atherosclerosis > MI & strokes (e.g. Danesh, 1999)
  - Stimulates insulin resistance / type 2 diabetes (Hotamisligil, 2006)
  - Elicits depressive symptoms, fatigue, and cognitive decline
- CRP and IL-6 predict mortality in older people
  (e.g. Ershler, 1993; Harris et al., 1999)

Inflammation - the “silent killer”
Chronic low-grade Inflammation

Inflammation increases with age

IL-6 & CRP

Age (years)
Inflammatory mediators: Interleukin-6 (IL-6), IL-1β, TNF-α, ICAM-1, VCAM-1, etc.

Intracellular Regulation of Inflammation

Role of Stress Systems
Chronic low-grade Inflammation

is stimulated by:
• age, health behaviors, overweight, smoking, infections, psychosocial factors

leads to:
• atherosclerosis, coronary heart disease, stroke, depression, fatigue, pain
Chronic low-grade Inflammation

Outlook & Open Questions

- Is low-grade inflammation a natural consequence of aging?
- Is low-grade inflammation the consequence of life-long stress exposure?

Stress of caregiving to a brain cancer patient

Rohleder et al. (in press) J Clin Oncol
Stress

Aging

Chronic low-grade Inflammation

Outlook & Open Questions

• Is low-grade inflammation a natural consequence of aging?

• Is low-grade inflammation the consequence of life-long stress exposure?

• What is the contribution of stress-induced changes in health behaviors?