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Cytokines, insulin-like growth factor 1, sarcopenia, and mortality in very old community-dwelling men and women: the Framingham Heart Study.

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BACKGROUND: Aging is associated with increased production of catabolic cytokines, reduced circulating levels of insulin-like growth factor 1 (IGF-1), and acceleration of sarcopenia (loss of muscle with age). We hypothesized that these factors are independently linked to mortality in community-dwelling older persons. **METHODS:** We examined the relation of all-cause mortality to peripheral blood mononuclear cell production of inflammatory cytokines (tumor necrosis factor alpha [TNF-alpha], interleukin 1 beta, interleukin 6), serum interleukin 6 and IGF-1, and fat-free mass and clinical status in 525 ambulatory, free-living participants in the Framingham Heart Study. **RESULTS:** Of the 525 subjects (aged 72 to 92 years at baseline), 122 (23%) died during 4 years of follow-up. After adjusting for age, sex, comorbid conditions, smoking, and body mass index, mortality was associated with greater cellular production of TNF-alpha (hazard ratio [HR] = 1.27 per log(10) difference in ng/mL; 95% confidence interval [CI]: 1.00 to 1.61; P = 0.05) and higher serum interleukin 6 levels (HR = 1.30 per log(10) difference in pg/mL; 95% CI: 1.04 to 1.63]; P = 0.02), but not with higher serum IGF-1 levels (HR = 0.70 per log(10) difference in pg/mL; 95% CI: 0.49 to 0.99; P = 0.04). In a subset of 398 subjects (55 deaths) in whom change in fat-free mass index during the first 2 years was measured, less loss of fat-free mass and greater IGF-1 levels were associated with reduced mortality during the next 2 years. **CONCLUSION:** Greater levels or production of the catabolic cytokines TNF-alpha and interleukin 6 are associated with increased mortality in community-dwelling elderly adults, whereas IGF-1 levels had the opposite effect.

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