Menopause. Publish Ahead of Print():, JUL 2018
DOI: 10.1097/GME.0000000000001162
,
PMID: 29994968
Issn Print: 1072-3714
Publication Date: 2018/07/09

A prospective study of inflammatory biomarker levels and risk of early menopause

Elizabeth R. Bertone-Johnson; JoAnn E. Manson; Alexandra C. Purdue-Smithe; Susan E. Hankinson; Bernard A. Rosner; Brian W. Whitcomb

Abstract

Objective:
Early menopause, the cessation of ovarian function before age 45, has consequences for fertility and cardiovascular health. Evidence from studies of women with autoimmune conditions and genetic studies supports a role for inflammation in early menopause, but the association of inflammatory markers and risk has not been directly evaluated.
Methods:
We assessed the relation of the soluble fraction of tumor necrosis factor alpha receptor 2 (sTNFR2), C-reactive protein, interleukin-6 (IL6) levels with incident early menopause among Nurses' Health Study II participants who provided a premenopausal blood sample in 1996 to 1999. Cases (n=328) were women reporting natural menopause between blood collection and age 45.
Methods:
Controls (n=492) included (1) 328 women with menopause after age 47, matched 1:1 with cases on age at blood collection and other factors; and (2) 164 additional women with menopause after age 45.
Results:
In multivariable models comparing cases and n=492 controls, we observed a significant association of sTNFR2 levels and risk of early menopause (P=0.002). Compared with women with the lowest sTNFR2 levels, odds ratios (95% CIs) for quartiles 2 to 4 were 0.60 (0.38-0.95), 0.93 (0.61-1.43), and 1.40 (0.93-2.11). Results further adjusting for antimüllerian hormone levels were similar in magnitude, as were results from sensitivity analyses of matched cases and controls (n=328 pairs), nonsmokers, and leaner women. C-reactive protein and IL6 levels were unrelated to risk.
Conclusions:
The observation of lower risk of early menopause among women with moderate sTNFR2 levels compared with women with lower and higher levels warrants further prospective study.