Inflammatory and insulinemic dietary patterns and risk of endometrial cancer: results from two prospective US cohort studies

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Background and Aims

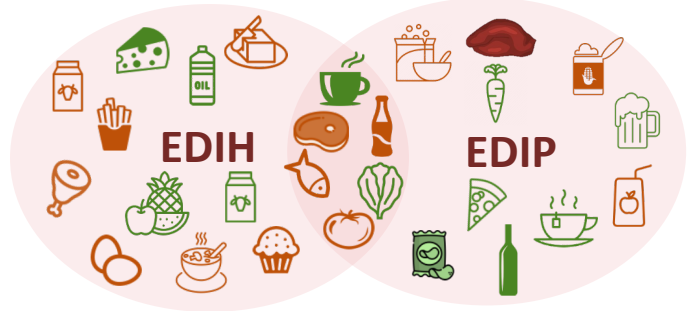
Whilst unopposed estrogen exposure is considered the major driver of endometrial carcinogenesis, it is unclear whether diets with inflammatory or insulinemic potential are associated with risk of endometrial cancer.

Methods

We followed 48,526 women from the Nurses' Health Study (NHS, 1984-2016) and 87,323 women from the NHS II (1989-2017). Using repeated measures of FFQs, we calculated **empirical dietary inflammatory pattern (EDIP)** and **empirical dietary index for hyperinsulinemia (EDIH) scores** based on circulating biomarkers of inflammation or C-peptide, respectively. Cox regression models were used.

Beginning in 1978 and on each biennial questionnaire, women were asked whether they had been diagnosed with endometrial cancer during the previous 2 years. A total of 1,571 endometrial cancer cases, of whom 1,468 were type 1 endometrial cancer cases, were self-reported through 2017

Food groups inversely or positively associated with plasma C-peptide (EDIH) or inflammatory biomarker (EDIP)



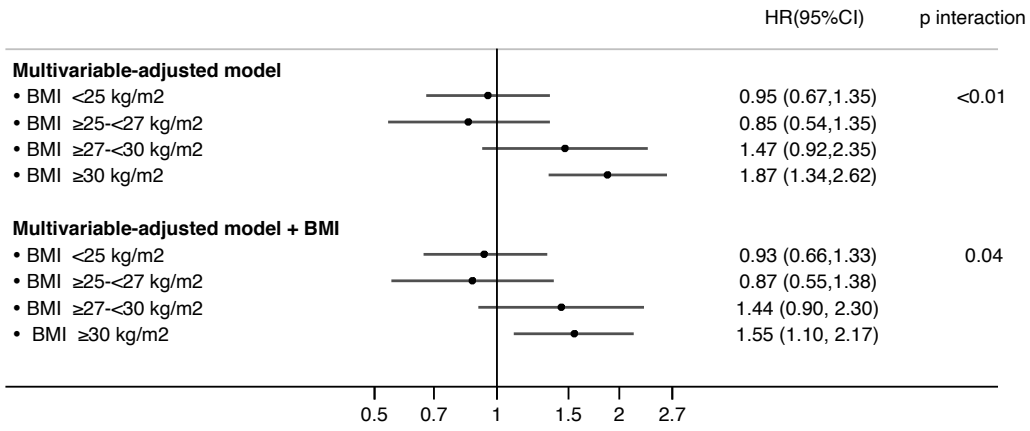
Results

During **2,544,615 person-years of follow-up**, we documented **1,468 type 1 endometrial cancer cases** in the two cohorts (NHS/NHSII).

Table 1. Hazard ratio (95% CI) of type 1 endometrial cancer according to quintiles of EDIP and EDIH in the NHS/NHSII

	Q1	Q3	Q5	P for trend[b]
EDIP[a]				
Cases/person-years	232/508491	279/509001	359/509256	
Age-adjusted	1 (ref)	1.30 (1.09, 1.55)	1.68 (1.42, 1.99)	<0.01
Multivariable-adjusted	1 (ref)	1.27 (1.07, 1.52)	**1.66 (1.40, 1.97)**	**<0.01**
Multivariable-adjusted + BMI	1 (ref)	1.08 (0.91, 1.29)	1.15 (0.96, 1.37)	0.18
Multivariable-adjusted + EDIH[c]	1 (ref)	1.17 (0.97, 1.41)	1.38 (1.10, 1.73)	<0.01
Multivariable-adjusted + EDIH[c] + BMI	1 (ref)	1.11 (0.92, 1.34)	1.21 (0.96, 1.52)	0.16
EDIH[a]				
Cases/person-years	248/508421	319/508865	359/509363	
Age-adjusted	1 (ref)	1.34 (1.13, 1.58)	1.58 (1.34, 1.86)	<0.01
Multivariable-adjusted	1 (ref)	1.32 (1.11, 1.56)	**1.57 (1.33, 1.86)**	**<0.01**
Multivariable-adjusted + BMI	1 (ref)	1.11 (0.94, 1.32)	1.02 (0.85, 1.21)	0.73
Multivariable-adjusted + EDIP[c]	1 (ref)	1.21 (1.01, 1.46)	1.32 (1.05, 1.65)	<0.01
Multivariable-adjusted + EDIP[c] + BMI	1 (ref)	1.08 (0.90, 1.29)	0.95 (0.75, 1.20)	0.75

Figure 1. Hazard ratio (95% CI) of type 1 endometrial cancer according to extreme quintiles of EDIP stratified by BMI



Cox model was stratified for age in months, cohort study and year of questionnaire return with further adjustment for smoking status, family history of endometrial cancer, age at menarche, oral contraceptives , parity, age at menopause, menopausal status, postmenopausal hormone use, and physical activity. The Multivariable-adjusted + BMI models adjusted for all covariates in the multivariable-adjusted model and additionally for BMI. [a] Energy-adjusted dietary pattern; [b] P for trend was calculated using continuous variables of dietary pattern in the model; [c] Model further mutually adjusting for EDIH or EDIP; [d] P for interaction was calculated using the Wald test by including interaction terms.

Conclusions

Higher dietary inflammatory or insulinemic potential was associated with increased endometrial cancer incidence, nonetheless this association was not independent of adiposity.

Among overweight women, greater EDIP was directly associated with risk, even after adjusting for BMI

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