Effects of Hormone Therapy on survival, cancer, cardiovascular and dementia risks in 1.5 million women over age 65: a retrospective observational study

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Abstract

Objectives: To examine the effects of estrogen on all-cause mortality, cancers, cardiovascular (CV) conditions, and dementia. Design: Retrospective observational study Setting: United States 2007-2018 Population: 1.5 million women aged over 65 in Medicare. Method: Cox regression with time-varying estrogen type, route, and strength as well as patient's characteristics. Main Outcome(s): all-cause mortality; 5 cancers- breast, lung, endometrial, colorectal, ovarian cancers; 6 CV conditions- ischemic heart diseases, heart failure, venous thromboembolism, stroke, atrial fibrillation, acute myocardial infarction; and dementia. Results: Compared to counterparts, estrogen monotherapy (ET) exhibited a significant, 21% (HR=0.79; 95% CI 0.77-0.81), reduction in mortality risk. The reduction was greater with estradiol (HR=0.76; 95% CI 0.73-0.78) than conjugated estrogen (HR=0.83; 95% CI 0.80-0.86), and with topical (HR=0.69; 95% CI 0.66-0.71) than oral preparations (HR=0.86; 95% CI 0.83-0.89). ET also exhibited significant risk reductions for all study cancers, breast (HR=0.83; 95% CI 0.80-0.85), lung (HR=0.89; 95% CI 0.85-0.93), endometrial (HR=0.68; 95% CI 0.63-0.73), colorectal (HR=0.87; 95% CI 0.82-0.92) and ovarian (HR=0.86; 95% CI 0.80-0.92). Different dose levels exhibited similar risk reduction in mortality and cancers. ET slightly increased the overall CV risk, mostly risks of ischemic heart diseases and stroke. However, such risks occurred with CEE, oral, and high dose ET. Both combination therapy (HR=1.19; 95% CI 1.08-1.31) and progestogen monotherapy (HR=1.16; 95% CI 1.08-1.26) exhibited a significantly increased risk of breast cancer. No HT exhibited an increased risk of dementia. Conclusions: Among senior female Medicare beneficiaries, the effect of hormone therapy varies by type, route, and strength of estrogen.

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