Endogenous sex hormones and risk of venous thromboembolism in women and men.

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BACKGROUND: Use of oral contraceptives with estrogen and hormone replacement therapy with estrogen or testosterone are associated with increased risk of venous thromboembolism (VTE). However, whether endogenous estradiol and testosterone concentrations are also associated with risk of VTE is unknown.

OBJECTIVE: We tested the hypothesis that elevated endogenous total estradiol and total testosterone concentrations are associated with increased risk of VTE in the general population.

METHODS: We studied 4658 women, not receiving exogenous estrogen, and 4673 men from the 1981-1983 Copenhagen City Heart Study, who had estradiol and testosterone concentrations measured. Of these, 636 developed VTE (deep venous thrombosis [DVT] and/or pulmonary embolism [PE]) during a follow-up of 21 years (range, 0.02-32 years). Associations between endogenous estradiol and testosterone concentrations and risk of VTE were estimated by Cox proportional hazards regression with time-dependent covariates and corrected for regression dilution bias.

RESULTS: Multifactorially adjusted hazard ratios of VTE for individuals with estradiol levels >75th vs. ≤25th percentile were 0.84 (95%CI, 0.25-2.85), 1.05 (0.53-2.08) and 1.05 (0.03-35.13) for pre- and post-menopausal women and men, respectively. For testosterone, corresponding risk estimates were 0.64 (0.03-12.32), 1.11 (0.66-1.86) and 1.30 (0.62-2.73). In addition, no associations were observed between extreme hormone percentiles (>95th vs. ≤75th) and risk of DVT, PE or recurrent VTE.

CONCLUSION: This prospective study suggests that high endogenous concentrations of estradiol and testosterone in women and men in the general population are not associated with increased risk of VTE, DVT or PE.

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