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ORIGINAL ARTICLE

Adverse Health Outcomes in Women Exposed In Utero to Diethylstilbestrol

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BACKGROUND

Before 1971, several million women were exposed in utero to diethylstilbestrol (DES) given to their mothers to prevent pregnancy complications. Several adverse outcomes have been linked to such exposure, but their cumulative effects are not well understood.

METHODS

We combined data from three studies initiated in the 1970s with continued long-term follow-up of 4653 women exposed in utero to DES and 1927 unexposed controls. We assessed the risks of 12 adverse outcomes linked to DES exposure, including cumulative risks to 45 years of age for reproductive outcomes and to 55 years of age for other outcomes, and their relationships to the baseline presence or absence of vaginal epithelial changes, which are correlated with a higher dose of, and earlier exposure to, DES in utero.

RESULTS

Cumulative risks in women exposed to DES, as compared with those not exposed, were as follows: for infertility, 33.3% vs. 15.5% (hazard ratio, 2.37; 95% confidence interval [CI], 2.05 to 2.75); spontaneous abortion, 50.3% vs. 38.6% (hazard ratio, 1.64; 95% CI, 1.42 to 1.88); preterm delivery, 53.3% vs. 17.8% (hazard ratio, 4.68; 95% CI, 3.74 to 5.86); loss of second-trimester pregnancy, 16.4% vs. 1.7% (hazard ratio, 3.77; 95% CI, 2.56 to 5.54); ectopic pregnancy, 14.6% vs. 2.9% (hazard ratio, 3.72; 95% CI, 2.58 to 5.38); preeclampsia, 26.4% vs. 13.7% (hazard ratio 1.42; 95% CI, 1.07 to 1.89); stillbirth, 8.9% vs. 2.6% (hazard ratio, 2.45; 95% CI, 1.33 to 4.54); early menopause, 5.1% vs. 1.7% (hazard ratio, 2.35; 95% CI, 1.67 to 3.31); grade 2 or higher cervical intraepithelial neoplasia, 6.9% vs. 3.4% (hazard ratio, 2.28; 95% CI, 1.59 to 3.27); and breast cancer at 40 years of age or older, 3.9% vs. 2.2% (hazard ratio, 1.82; 95% CI, 1.04 to 3.18). For most outcomes, the risks among exposed women were higher for those with vaginal epithelial changes than for those without such changes.

CONCLUSIONS

In utero exposure of women to DES is associated with a high lifetime risk of a broad spectrum of adverse health outcomes. (Funded by the National Cancer Institute.)

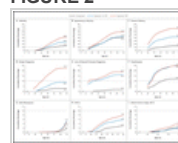
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FIGURE 1



Hazard Ratios for Adverse Health Outcomes in the DESAD and Dieckmann Cohorts, According to Diethylstilbestrol (DES) Exposure Status and, in the DES-Exposure Group, the Presence or Absence of Vaginal Epithelial Changes (VEC) at Entry Examination.

FIGURE 2



Cumulative Risks of Adverse Health Outcomes in the DESAD and Dieckmann Cohorts, According to Diethylstilbestrol (DES) Exposure Status and, in the DES-Exposure Group, the Presence or Absence of Vaginal Epithelial Changes (VEC) at Entry Examination.

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SOURCE INFORMATION

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Raymond Kaufman, M.D. is deceased.

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