From One Womb to Another

Early Estrogenic Exposures and Later Fibroid Risk

Uterine fibroids (leiomyomata) are the most common pelvic tumors in U.S. women as well as the most common cause for hysterectomy. Both estrogen and progesterone influence fibroid development, whereas early-life hormonal exposures can affect uterine development and a woman’s response to estrogen or progesterone later in life. In a new study, researchers investigate novel hypotheses regarding fibroid pathogenesis in relation to early-life exposures, most of which have not been explored previously [EHP 118:375–381; D’Aloisio et al.].

The authors sought to determine whether in utero, early-life, and childhood exposures were linked with self-reported early fibroid diagnosis (by age 35) among non-Hispanic white participants in the NIEHS Sister Study. Participants completed self-administered questionnaires to assess intrauterine and early-life exposures. They also provided information on known and suspected risk factors for breast cancer and other end points including fibroids. The retrospective analysis included nearly 20,000 women who were 35–59 years old when they enrolled in the Sister Study.

The results showed an association between early fibroid diagnosis and having been fed soy formula during infancy, having a mother with pre-pregnancy diabetes, being born at least 1 month early, and low socioeconomic status during childhood. Early fibroid diagnosis also showed associations with prenatal exposure to diethylstilbestrol and with having a mother with gestational diabetes, although these associations were observed only among women who reported probable (versus definite) exposures.

Formaldehyde Exposure among Children

A Potential Building Block of Asthma

Formaldehyde, a staple chemical in the manufacturing industry, is known to trigger acute adverse health effects such as skin, eye, nose, and throat irritation. Research on the human health effects of this compound has focused on a possible link between formaldehyde exposure and nasopharyngeal cancer. A new study reports the results of a meta-analysis of the literature examining a potential link between formaldehyde exposure and the prevalence of asthma in children [EHP 118:313–317; McGwin et al.].

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The possibility of long-term health effects of soy formula is of interest because soy contains estrogenic isoflavones, and infants fed only soy formula consume more isoflavones (mostly genistein) per unit body weight than do adults who consume soy foods. The authors report a 25% increase in early fibroid diagnoses for women who had been fed soy formula compared with those who had not. Although the authors postulated the first 2 months of life may include a period more sensitive to isoflavone exposure, they were unable to demonstrate an association with soy formula intake during this time period specifically.

In rodent studies, neonatal treatment with genistein has been associated with later development of uterine cancer, abnormal mammary gland development, differences in hormone receptor levels in mammary glands, altered estrous cycles, reduced fertility, and early reproductive senescence (comparable to menopause in humans). However, there is a lack of human research in this area except for 1 study in which women who had received soy formula as infants reported increased menstrual pain and longer menstrual bleeding (which are symptoms of uterine fibroids).

This was also the first study to evaluate whether in utero exposure to maternal diabetes is associated with fibroids. Women whose mothers had diabetes before their pregnancy were twice as likely to report an early fibroid diagnosis as women whose mothers were not diabetic. The authors speculate that in utero exposure to maternal diabetes could alter methylation patterns in regions that affect expression of genes relevant to fibroid development.

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