

**Oral Abstract 18:** Outdoor air pollution exposure and endometrial cancer subtypes

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Topic  
Endometrial

**Objectives**

Growing evidence suggests air pollution may contribute to the development of endometrial cancer, potentially through increased inflammation, DNA damage, or disruption of endocrine pathways. The relationship between air pollution exposure and incidence of specific histologic subtypes of endometrial cancer remains unexplored.

**Methods**

We identified 18,303 women diagnosed with a first primary, invasive endometrial cancer in the Georgia Cancer Registry (2005-2021). Exposure to outdoor air pollution was defined as the annual mean particulate matter (PM<sub>2.5</sub>) and nitrogen dioxide (NO<sub>2</sub>) concentrations at the census tract-level in the 5 years prior to endometrial cancer diagnosis. We used polytomous logistic regression to estimate odds ratios (ORs) and 95% confidence intervals (CIs) for the association between each pollutant and endometrial cancer subtype (G3 endometrioid and non-endometrioid vs. G1-G2 endometrioid). Models were adjusted for age at diagnosis, race/ethnicity, neighborhood socioeconomic status, rurality, and marital status. Given changes in air pollution and subtype incidence over the study period, we also examined models adjusting for year of diagnosis.

**Results**

Among endometrial cancer cases, there was a modest association between NO<sub>2</sub> exposure (per 5-ppb increase) and diagnosis of G3 endometrioid compared with G1-G2 endometrioid (OR 1.06, 95% CI 1.01, 1.10). The relationship to PM<sub>2.5</sub> exposure was more pronounced; each 5 µg/m<sup>3</sup> increase was associated with 28% higher odds of being diagnosed with G3 vs. G1-G2 endometrioid cancer (95% CI: 1.17, 1.41). In contrast, associations with non-endometrioid were null for NO<sub>2</sub> and inverse for PM<sub>2.5</sub> in the primary models (Table 1). After adjusting for year of diagnosis, estimates for G3 endometrioid modestly attenuated but remained positive while the association between PM<sub>2.5</sub> and non-endometrioid cancers became positive (OR 1.12, 95% CI: 1.03, 1.20).

**Conclusions**

In our study, higher air pollution exposure—particularly PM<sub>2.5</sub>—was associated with higher odds of more aggressive endometrial cancer subtypes. These findings suggest air pollution may contribute to heterogeneity in endometrial cancer etiology. These data lay the groundwork for further analyses to better characterize populations at risk and to develop early detection and prevention strategies.

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