

2026 ANNUAL MEETING



Poster 73: Vulvar and vaginal cancer outcomes are not impacted by air quality

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Topic
Vulvar

Objectives

Air quality impacts all-cause mortality, as well as chronic diseases including cancers. Vulvar and vaginal cancers have increased incidence with environmental exposures such as tobacco use, but the impacts of air quality have not previously been studied.

Methods

An IRB approved retrospective chart review was undertaken, reviewing vulvar and vaginal cancers treated by gynecologic oncologists at a single institution from 2012-2024. Patient demographics, stage, histology, and comorbidities were collected. Patients' addresses were de-identified by census tract, then correlated with the Office of Environmental Health Hazard Assessment CalEnviroScreen 4.0 data to assign level of air pollution exposure. Air quality measures included overall pollution, particles with a diameter of 2.5 μm or less (PM2.5), ozone, and diesel. Social vulnerability index (SVI) was also collected from the CDC. Descriptive statistics, Fisher exact test, and t-tests were used to analyze data with significance at $p=0.05$.

Results

A total of 125 charts were reviewed - 103 with vulvar cancer and 22 with vaginal cancer. Median age was 68 (IQR 55-78). 85 (68%) were White and 28 (22%) were Hispanic. 87 (70%) had squamous cell histology. 45(36%) were stage III or IV. At 3 years, 79 (63%) were surviving, and 36 (29%) had died. 85 (68%) of patients lived in areas above the national maximum level of ozone (90th percentile). 84 (67%) lived in areas with PM2.5 above the national maximum of 9ng/m2. Median SVI was 0.74 (IQR 0.46-0.88), and 59 (47%) were at a high level of vulnerability, with SVI over 0.75. There was no significant difference in air quality measures when stratified by patient factors. Air quality did not significantly impact patient outcomes. Current tobacco users were more likely to live in an area with higher SVI than non-smokers (0.8 vs 0.71, $p=0.04$) or former smokers (0.8 vs 0.75, $p=0.03$). Those with advanced stage disease also lived in higher SVI areas (0.8 in advanced stage vs 0.66 in early stage, $p=0.01$).

Conclusions

This study did not show a relationship between air quality and vulvar or vaginal cancer development. SVI was related to tobacco use and advanced stage, which speaks to the impact of social determinants of health. Further large-scale population-based studies are needed to evaluate the impacts of environmental factors on the development of gynecologic malignancy.

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Abstract Table or Graph

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