Body Powder and Ovarian Cancer Risk—What Is the Role of Recall Bias?

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See related article by Schildkraut et al., p. 1411

Ovarian cancer remains the most lethal gynecologic cancer, largely due to the poor prognosis of late-stage disease (1). Screening methods have proved to be largely ineffective (2, 3); thus, the identification of modifiable risk factors remains important for potentially reducing ovarian cancer mortality. Epidemiologic evidence implicates chronic inflammation as an important mechanism in the pathogenesis of ovarian cancer (4). Proinflammatory exposures associated with risk include increased number of lifetime ovulatory cycles, endometriosis, and pelvic inflammatory disease (4). Reduced risks for aspirin (5) suggest direct anti-inflammatory actions, whereas reduced risks with tubal ligation and hysterectomy may reflect limited exposure to environmental causes of inflammation via the fallopian tubes (4). Body powder use, specifically perineal talc use, has been suggested as another potential proinflammatory exposure that may be related to ovarian cancer risk.

Several case–control studies have shown an association between genital powder use and increased risk of ovarian cancer (6–9). The International Agency for Research on Cancer classified genital talc use as “possibly carcinogenic to humans” (carcinogenic group 2B) in 2010 (10). However, two prospective cohort studies, which assessed genital powder use prior to cancer development, did not support increased risk of overall ovarian cancer [studies included n = 307 (11) and 428 (12) ovarian cancers]. An increased risk of serous invasive ovarian cancer (n = 160), the most common and lethal subtype, was reported in the Nurses’ Health Study (11); however, this finding was not replicated among 185 serous invasive ovarian cancers in a recent report from the Women’s Health Initiative (12). A detailed summary of the challenges of studying self-reported talc exposure in epidemiologic studies has been discussed previously (13). Since 2014, several lawsuits against producers of talc powder were filed on behalf of women with ovarian cancer, resulting in widespread media coverage about this topic (14). Thus, concerns remain about potential recall bias in contemporary case–control studies of talc use and ovarian cancer risk.

Few studies have evaluated whether body powder use is associated with increased risk of ovarian cancer among African American women. The prevalence of body powder use is reported to be higher among African American women than among non-Hispanic white women, whereas the incidence of ovarian cancer in African American women is substantially lower than non-Hispanic white women in the United States (1). Two previous case–control studies evaluated the association between genital powder use and ovarian cancer stratified by race/ethnicity (15, 16). The first reported an elevated [adjusted OR, 1.56; 95% confidence interval (CI), 0.80–3.04], albeit not statistically significant, association with one or more years of talc use based on 128 African American cases and 143 African American controls (15). The second study reported a large increased risk (unadjusted OR, 5.08; 95% CI, 1.32–19.6) based on small numbers (35 cases and 23 controls; ref. 16). In the current issue of Cancer Epidemiology, Biomarkers & Prevention, Schildkraut and colleagues provide data that support a positive association between body powder use and ovarian cancer risk from a large (>500 cases) case–control study of African American women in the United States (17). An intriguing piece of data in the study indicates that the significant positive association between “any” genital powder use and ovarian cancer was only apparent among the group of cases and controls interviewed after 2014 (adjusted OR, 2.91; 95% CI, 1.70–4.97), when the talc–ovarian cancer association was widely discussed in the media. On the basis of 351 cases and 571 controls interviewed prior to 2014, there was no association between “any” genital powder use and ovarian cancer risk (OR, 1.19; 95% CI, 0.87–1.63; Pinteraction = 0.005). The authors posited that the press surrounding the recent lawsuits would have sharpened memories of body powder use and increased the reported use among both cases and controls. In the study by Schildkraut and colleagues (table 2 in ref. 17), however, the prevalence of “any” genital powder use among controls was the same across the two time periods (~34% of controls reported any genital powder use), whereas the proportion of cases reporting “any” genital powder use was increased (substantially) among those interviewed in 2014 or later (51.5% vs. 36.5% prior to 2014). Given the demonstrated differential reporting of “any” genital powder use by cases across interview date (<2014, ≥2014), it would be useful to also evaluate the main study results related to frequency, duration, and lifetime applications stratified by interview date.

Some of the other findings in the current study warrant further discussion. In a recent meta-analysis of individual participant data across eight studies conducted by the Ovarian Cancer Association Consortium (OCAC; ref. 18), the positive association between powder use and ovarian cancer was specific to genital use, whereas the association with nongenital use was null (pooled OR, 0.98; 95% CI, 0.89–1.07). The specificity of the association has been used to provide support for a causal association between genital powder use and ovarian cancer (18). The current study reported elevated ovarian cancer risk with both “any” genital powder use (OR, 1.44; 95% CI, 1.11–1.86) and only nongenital powder use (1.31; 0.95–1.79), with statistically significant results across both categories in analyses restricted to postmenopausal women. The lack of specificity in the current study may also reflect issues related to the challenges of remembering specific details of location, frequency, or duration of body powder use. In addition, when a pronounced binary association is present, use of the never or no category in assessing trend can induce a trend where none exists.
The recent OCAC analysis reported no trend with increasing lifetime application when restricted to talc users (18). Small sample size may limit the ability to evaluate a trend among the exposed in some studies. However, the prevalence of any genital talc use in the current study should be sufficient to evaluate trends in frequency and duration among women who reported powder use.

The current study highlights the concern over recall bias in case–control studies, particularly once an exposure becomes the subject of considerable media coverage. New ovarian cancer case–control studies will need to develop creative ways to safeguard against information bias in the assessment of genital powder use/talc exposure. In conclusion, the results of the largest ovarian cancer case–control study in African American women conducted to date support a possible association between body powder use and ovarian cancer risk. However, the results suggest potential limitations of recall bias that warrant a cautious interpretation.

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