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Talcum powder and ovarian cancer

Behind the Headlines

Monday September 29 2008



Researchers have warned that "women should stop using talcum power because of the risk of ovarian cancer", reported *The Daily Telegraph*. It said that a study has found that women who apply it to the genital area every day are 41% more likely to develop ovarian cancer. Previous studies have already raised concerns over the use of talc, but this finding makes it a "much greater risk than previously thought". It added that women with certain genetic profiles are at even greater risk.

In this case-control study, the researchers combined the results of two different studies to look for a link between talc use on the genitals and risk of ovarian cancer, and how genetics might affect this risk. If put in context with other studies on this topic, this study adds to the body of evidence suggesting that talc use may be linked to ovarian cancer. More research will undoubtedly follow. Results from studies that explicitly measure talc use in women before they develop ovarian cancer will do more to settle any contention over this issue. Until then, if women are concerned they could avoid using talc in this way.

Where did the story come from?

Dr Margaret A. Gates and colleagues from the Brigham and Women's Hospital, Harvard Medical School, and the Dartmouth-Hitchcock Medical Center in the US carried out the research. The study was funded by the National Cancer Institute and the National Institutes of Health. The study was published in the [peer-reviewed](#) medical journal: *Cancer Epidemiology Biomarkers Prevalence*.

What kind of scientific study was this?

The researchers say that there have been extensive investigations into the use of talcum powder on the genitals as a possible risk factor for ovarian cancer. Although some studies have found an increased risk and the overall evidence supports a "modest association", the association is a controversial one due to "a lack of a clear dose-response with increasing frequency or duration of talc use, the possibility of confounding or other biases, and the uncertain biological mechanism".

In this [case-control study](#), the researchers were interested in looking at whether talc had an effect on the risk of ovarian cancer, and whether the presence or absence of particular genetic variations affected this risk. They were particularly interested in variations in two genetic regions: glutathione S-transferase M1 (GSTM1) and N-acetyltransferase 2 (NAT2). These two regions appear to modify the relationship between exposure to asbestos (a known carcinogen) and the risk of mesothelioma (a type of cancer). According to the researchers, talc is chemically similar to asbestos, and they were interested in whether the same molecular and genetic pathways might be involved. They had a theory that people with particular variations in these genes (which meant they were less able to metabolise, or "detoxify" carcinogens) would have a stronger link between talc use and ovarian cancer risk.

The study combined the results from two separate studies, the New England Case-Control Study (NECC) and the Nurses Health Study (NHS). Together, the studies provided 1,385 ovarian cancer cases. The NECC was a case-control study that compared women with ovarian cancer (cases) to women without the disease (controls). Blood specimens were taken when the women enrolled and DNA had been extracted from these and stored. The NHS was a cohort study which had followed and been in regular contact with over 120,000 female nurses since 1976. Some of these participants had provided blood samples from which DNA was extracted, while those who had not given blood had their DNA extracted from samples of cheek cells from a mouth swab. From these women, the researchers selected those nurses with newly diagnosed ovarian cancer before June 1 2004, and matched them to three controls per case (they chose controls with the same month and year of birth, menopausal status and DNA type).

The NECC study collected information on talc exposure with a questionnaire. The questions asked the participants how regularly they used talc, baby or deodorising powder, where they used it (genital area, sanitary napkins, underwear, or nongenital areas), how frequently they used it, how many years they had used it, and their brand of powder. The NHS study also collected information on talc use, and specifically how frequently talc, baby or deodorising powder was used in the genital/perianal area.

Once data had been collected on the participants' genetic status, talc use, and presence of ovarian cancer, the researchers assessed how the genotypes were distributed across cases and controls.

What were the results of the study?

By combining the two studies, the researchers had 1,385 women with ovarian cancer and 1,802 women without ovarian cancer to analyse. The main finding was that talc use was associated with an increased risk of ovarian cancer in this combined study population, with daily use of talc significantly increasing risk of ovarian cancer by 1.4 times. There was also a link seen between increasing frequency of talc use and serious, invasive cancer.

None of the gene variations were associated with increased risk of ovarian cancer in the NECC study nor when results were pooled from both studies. In the NHS study, a variation in the NAT2 gene was associated with a reduced risk of ovarian cancer. When looking at the link between talc and cancer across different gene variants, women who had variations in GSTT1 (i.e. GSTT1-null) and combined GSTM1-present/GSTT1-null variation were at greater increased risk of cancer. This greater risk was also evident when the researchers considered serous invasive cancer types only (one of the three main ovarian cancer types).

What interpretations did the researchers draw from these results?

The researchers conclude that their results provide additional support to the idea that exposing the genitals to talc affects the risk of epithelial ovarian cancer. The observed dose response (i.e. that increasing frequency of talc use was associated with a total greater risk of epithelial ovarian cancer, and the risk of serous invasive types) is further evidence of a link. They say the study suggests that genes involved in 'detoxification pathways' may be involved in the biological response to talc, and that the link with ovarian cancer may vary by gene type.

What does the NHS Knowledge Service make of this study?

The study has some limitations, some of which the researchers acknowledge:

- The two combined studies used different methods to collect their data. The researchers say this led to "loss of some detail, particularly for the NECC".
- The women in the NHS study were only asked once whether they used talc, and so it is possible that the women in this study were misclassified in terms of their talc use.

history

The strength of this study is limited by its design. Case control studies have several shortcomings: firstly, they cannot prove causation (i.e. that using talcum powder 'caused' the increased risk of ovarian cancer). One reason for this is that it is not possible to determine conclusively that exposure preceded outcome, (i.e. in this case that women used talc before they were diagnosed with cancer).

Another problem is that of unmeasured confounders, in that the factors actually responsible for the link may not have been measured in the two studies. While the researchers took into account some factors (age, menopausal status, use of oral contraceptives, parity, BMI etc), there are likely to be some important ones that were unaccounted for

Although this study has shortcomings and does not provide strong evidence of a causal link in itself, when put in context with other studies on this topic, it adds to the body of evidence suggesting that use of talc may be linked to ovarian cancer. More research will undoubtedly follow, and results from prospective studies – those that explicitly measure whether exposure occurs before outcome – will be more convincing. Until then, if women are concerned they could avoid using talc in this way

Analysis by **Bazian**.

Edited by **NHS Choices**

Links to the headlines

[Women warned of talcum powder cancer risk](#), The Daily Telegraph, September 29, 2008

[Women warned of talcum powder cancer risk](#), Daily Mail, September 29, 2008

Links to the science

Gates MA, Tworoger SS, Terry KL, et al [Talc Use, Variants of the GSTM1, GSTT1, and NAT2 Genes, and Risk of Epithelial Ovarian Cancer](#) Cancer Epidemiology Biomarkers & Prevention 2008; 17:2436-2444