Another perk of painkillers? Decreased hormone levels may reduce cancer risk

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Postmenopausal women who regularly use aspirin and other analgesics (known as painkillers) have lower estrogen levels, which could contribute to a decreased risk of breast or ovarian cancer.

"We observed some significant inverse associations between concentrations of several estrogens and the use of aspirin, aspirin plus non-aspirin nonsteroidal anti-inflammatory drugs (NSAIDs), and all analgesics combined," said Margaret A. Gates, Sc.D., research fellow at the Channing Laboratory at Brigham and Women's Hospital and Harvard Medical School.

"Our results suggest that among postmenopausal women, regular users of aspirin and other analgesics may have lower estrogen levels than non-users," Gates added.

These study results are published in Cancer Epidemiology, *Biomarkers & Prevention*, a journal of the American Association for Cancer Research.

Gates and colleagues examined the association between use of aspirin, NSAIDs and acetaminophen and concentrations of estrogens and androgens among 740 postmenopausal women who participated in the Nurses' Health Study.

Frequency of all analgesic use was inversely associated with estradiol, free estradiol, estrone sulfate and the ratio of estradiol to testosterone.

Average estradiol levels were 10.5 percent lower among women who regularly used aspirin or non-aspirin NSAIDs. Similarly, free estradiol levels were 10.6 percent lower and estrone sulfate levels were 11.1 percent lower among regular users of aspirin or other NSAIDs. Among regular users of any analgesic (aspirin, NSAIDs or acetaminophen), levels of these hormones were 15.2 percent, 12.9 percent and 12.6 percent lower, respectively, according to Gates.

Michael J. Thun, M.D., M.S., vice president emeritus of epidemiology and surveillance research at the American Cancer Society, said the question of whether regular use of aspirin and other NSAIDs is causally related to reduced breast cancer risk is important, but still unresolved.

Thun believes these study results do not confirm whether aspirin-like drugs caused the reduction in circulating estradiol. However, the results do provide evidence that aspirin and other NSAIDs might reduce circulating levels of estradiol by about 10 percent, according to Thun, who is an editorial board member of Cancer Epidemiology, Biomarkers & Prevention, and was not associated with this study.

"Hopefully these findings will motivate a trial to determine whether the association between aspirin use and hormone levels is causal," he said. "Until then, we have a possible mechanism for a potentially important, but as yet unproven chemopreventive benefit."

Gates agreed and said that additional research, like a randomized trial of NSAID use and hormone levels, is needed to confirm these results and to determine whether the decrease in hormone levels translates to a reduced risk of breast or ovarian cancer. If an inverse association between analgesic use and risk of breast or ovarian cancer is confirmed, then this research may have important public health implications.

"Although the overall risks and benefits would need to be weighed,

analgesics could be implemented as a chemopreventive and may decrease the risk of several cancers," she said.

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