Caffeine gives a small boost to painkillers' effectiveness

March 16 2012, By Christen Brownlee

Caffeine improves the effectiveness of over-the-counter pain relieving drugs, but only by a small margin, according to a new evidence review in *The Cochrane Library*.

Caffeine, the same stimulant present in coffee, tea, sodas, and chocolate, is a common ingredient in many painkillers sold in the United States. However, adding caffeine to analgesics was based on scant evidence from studies conducted nearly 30 years ago , said review author Sheena Derry, a senior research officer at University of Oxford in the U.K. Previous studies have shown that caffeine has no significant effect in reducing pain.

"Caffeine has been added to a large number of analgesic formulations based on this 'inherited wisdom,' but uncertainty has remained and arguments persist" as to its effectiveness, she said.

To settle the debate, Derry and her colleagues collected evidence from modern, randomized, double-blind studies that compared patients who received a dose of analgesic to those who received the same dose plus a standard amount of caffeine. 19 studies together evaluated 7,238 patients who took mostly acetaminophen or ibuprofen, some with 100 to 130 mg of added caffeine. The patients took these drugs for a variety of painful conditions, including post-surgical dental pain, postpartum pain, and headache.

Combined results from all the studies showed that the groups of patients

randomized to take pain medicine that included caffeine had a significantly larger proportion of individuals who had a good level of pain relief. Specifically, an additional five to 10 percent of patients who took the caffeinated formulations said that they experienced at least 50 percent of the maximum possible pain relief over four to six hours, considered their treatment very good or excellent, or had headache relief after two hours.

Derry says that the mechanism by which caffeine boosts other painkillers' effectiveness is currently unknown. The stimulant could have multiple effects, including getting other drugs into the bloodstream faster, raising their concentration by slowing their clearance from the bloodstream, directly affecting how nerves perceive pain, or even changing how people perceive pain by affecting their moods or emotions.

Regardless, she added, the boost in analgesic effectiveness could be a boon for patients. "Although the size of the effect is small, it is probably clinically useful," Derry said.

According to Steven P. Cohen, M.D., associate professor of anesthesiology and critical care medicine at the Johns Hopkins School of Medicine and director of pain research at Walter Reed National Military Medical Center, doctors should choose carefully which patients receive caffeine along with their regular pain medicines. Since the booster effect is small, he explains, patients taking strong painkillers for very painful conditions probably won't benefit.

However, he says, the drug is a relatively harmless addition that might help patients with more minor conditions.

"Caffeine is a really, really safe drug, so safe that we don't regulate it," he says. "Basically, it's a very minimal risk and might be beneficial,

depending on the patient."

More information: Derry, C.J., et al. (2012). Caffeine as an analgesic adjuvant for acute pain in adults. *The Cochrane Library*, DOI: 10.1002/14651858.CD009281.pub2

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