Chocolate Linked to Lower Stroke and Stroke Mortality Risk

Par Susan Geffrey

February 12, 2010 — Just in time for Valentine's Day, a new systematic review from Canadian researchers suggests higher chocolate consumption may be associated with a lower risk for incident stroke and stroke-related mortality.

Results of 2 prospective cohort studies showed, respectively, a 22% reduction in stroke risk for those who had 1 serving of chocolate per week and a 46% reduction in stroke mortality from weekly consumption of flavonoids in 50 g of chocolate vs no consumption. A third study showed no association between chocolate intake and stroke or death.

However, the number of studies looking at this relationship was small, senior author Gustavo Saposnik, MD, from St. Michael's Hospital and the University of Toronto, Canada, told *Medscape Neurology*. "We need more prospective studies that specifically identify the type of chocolate and the amount, including the amount of flavonoids included in the composition of the chocolate, to make more valid conclusions," he said.

The results were released February 11 in advance of their planned presentation at the upcoming American Academy of Neurology 62nd Annual Meeting in April. The abstract will post to http://www.aan.com on February 17.

Varying Effects

Chocolate contains cocoa butter, flavonoids, carbohydrates, and vitamins. Previous studies, most of them epidemiological, have shown varying effects of chocolate consumption on the risk for cardiovascular disease, the researchers, with first author Sarah Sahib, BScCA, from McMaster University in Hamilton, Ontario, Canada, write. "Less is known about the risk of stroke in association with flavonoid intake," they note.

To examine this association, the authors carried out a systematic review of studies published between 2001 and 2009, using search terms including flavonoids, flavanols, isoflavones, and anthocyanidins, as well as stroke and mortality.

"We found 88 publications, among them 3 prospective studies, and another retrospective study providing some information on the effect of chocolate consumption on the incident risk of stroke," Dr. Saposnik said. "Two of these studies show a reduction in the incident risk of stroke, and the other 2 didn't show any substantial difference."

For example, of the 3 prospective studies, 1 found no association between flavonoid intake and the risk for stroke or death when 3% of catechin intake came from chocolate (relative risk [RR], 0.92; 95% confidence interval [CI], 0.51 - 1.68).

However, a second study found a reduction in incident stroke for chocolate consumption once per week vs no consumption (RR, 0.78; 95% CI, 0.65 - 0.94).

The third study looked at the association between flavonoid intake and stroke mortality and found a suggestion of protection against stroke mortality from 50 g of chocolate (hazard ratio, 0.54; 95% CI, 0.30 - 0.96).

The authors conclude that further prospective studies are needed "to assess whether the benefit of chocolate-based flavonoid consumption truly lowers stroke risk, or whether the apparent benefit is biased by a healthy user effect."

Investigation a Challenge

However, although more data on this link would be helpful, Dr. Saposnik pointed to several challenges to doing these kinds of studies. First, it is important to document the actual content of flavonoids or other substances thought to be active in the chocolate being consumed.

"There are some studies that compare the content of flavonoids for different food elements and antioxidant capacity," he said. Dark chocolate is one with the highest flavonoids and procyanidins, which have been associated with lower cardiovascular risk, and in addition, dark chocolate has the highest antioxidant capacity.

Still, there are varying types of chocolate, and the amounts that are required to affect stroke risk may bring a load of sugar and fats that may work counter to the beneficial effects. "50g of chocolate per day is a significant amount," Dr. Saposnik notes.

Finally, large longitudinal studies are also expensive, and funding for them scarce, which may explain why much of the evidence is coming from epidemiologic studies, he added. One alternative may be to conduct smaller studies, looking the effects of consuming controlled amounts of chocolate on some intermediate biomarker of stroke risk.

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