An Apple a Day Keeps Stroke Away?

Consumption of White Fruits and Vegetables Is Associated With Lower Risk of Stroke

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See related article, pages 3190—3195.

A healthy lifestyle, consisting of abstinence from smoking, low-to-normal body mass index, moderate alcohol consumption, regular exercise, and healthy diet is associated with a reduction in ischemic stroke. This evidence has already been incorporated in national and international guidelines on primary stroke prevention. Whereas the first 4 behaviors are based on explicit recommendations with clearly defined goals, the definition, and even more, the implementation of a healthy diet is complex, making appropriate food choices in everyday life difficult. A more simple and practical approach to healthy food selection might promote healthy nutrition and improve the primary prevention of stroke. Guidelines generally advise a well-balanced diet low in saturated fat and salt, rich in fiber, and high in fruits and vegetables. There is conflicting evidence, however, on which food groups are most beneficial in the primary prevention of stroke.

The study by Oude Griep et al, published in this issue of Stroke, examined the association of fruit and vegetable intake categorized according to the color of the edible portion with 10-year incidence of stroke. The analysis was based on 20069 men and women aged 20–65 years from a population-based Dutch cohort study. For assessment of fruit and vegetable intake, the authors used a validated, semiquantitative, 178-item food frequency questionnaire. Following the classification of Pennington and Fisher, the authors categorized fruits and vegetables into 4 color groups: green, orange/yellow, red/purple, and white. Vital status of the participants was monitored over an average follow-up of 10.3 years, during which 233 first-ever incident strokes occurred. The authors found that intake of white-colored fruits and vegetables was inversely associated with stroke incidence in a dose-dependent relationship; they found a 9% lower risk of stroke for each 25 g/d increase in white fruit and vegetable consumption, with apples and pears being the largest contributors to this category. There was no association between incident stroke and the other fruit and vegetable color groups.

Two recent meta-analyses suggested that fruit and vegetable consumption decreases the risk of stroke in a dose-dependent relationship. This might be based on specific nutrients of single fruits or vegetables that exhibit a protective effect, such as certain vitamins or minerals. There is, for example, evidence that the lack of some nutrients, such as vitamin D, increases the risk of stroke. Antioxidant vitamin supplements, however, have largely failed to reduce the risk of stroke in clinical trials, sometimes even increasing the risk of cardiovascular events; thus, they are not recommended for primary prevention of stroke. These discrepancies support the hypothesis that not isolated food components, but rather a specific interplay of different nutrients in whole fruits and vegetables and in a diet rich of plant foods, might mediate their protective effects.

The study by Oude Griep et al focuses on the beneficial effect of food groups, thus allowing for synergistic effects of different nutrients in whole fruits and vegetables. This approach is of particular importance in the active prevention of cerebrovascular disease, as it directly translates into healthy food choices. Oude Griep et al classified fruits and vegetables according to the color of the edible portion. This categorization was recently suggested by Heber, based on the hypothesis that many health-protective phytochemicals, such as flavonoids or β-carotene, are colorful and thereby offer a simple estimation of a plant’s physiological effects.

Only a few studies systematically examined the impact of specific food groups on the incidence of stroke. This might at least partly be due to difficulties in the acquisition of reliable information on the frequency and magnitude of fruit and vegetable intake in observational studies which is associated with the need for large sample sizes to receive appropriate reliability. Oude Griep and colleagues used a validated, detailed semiquantitative food frequency questionnaire in a remarkably large cohort of well-characterized men and women. They also made ample statistical adjustments to minimize confounding by healthy lifestyle. However, some methodological aspects have to be kept in mind regarding the interpretation of the results. The validity and reproducibility of fruit and vegetable intake based on food frequency questionnaires is rather low. The observed reduction in stroke risk might further be caused by a generally healthier lifestyle of individuals consuming a diet rich in fruits and vegetables. Effects of this healthy lifestyle might be more complex than an adjustment for single components such as nonsmoking or physical activity takes into account. Thus, a specific reduction in stroke risk for single subgroups of plant foods still needs to be interpreted with caution.
The work by Oude Griep et al proposes an interesting and practical concept that calls for replication studies, ideally supported by analysis of corresponding biomarker profiles. The European EPIC framework offers a good setting for this. If replication is successful in independent studies and countries the time for an “apple a day” clinical trial has come.

Disclosures

None.

References


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