

Anti-Inflammatories: New Hope for Alzheimer's?

Drugs now commonly used to combat inflammation may forestall or slow the devastation of Alzheimer's disease, according to a new study of elderly twins.

"If the evidence bears this out . . . it would be an absolutely astonishing finding," says lead researcher John C.S. Breitner of Duke University Medical Center in Durham, N.C. Currently, there is no definitive way to halt the progressive memory loss and other symptoms of this degenerative brain disease.

"It's an elegant study," says Patrick L. McGeer of the University of British Columbia in Vancouver. McGeer and his colleagues first put forward the theory that anti-inflammatory drugs might stave off Alzheimer's disease. The twin study adds powerful evidence to a body of data that suggests inflammation plays some role in the development of Alzheimer's disease (SN: 12/5/92, p.394), McGeer adds.

Yet researchers uniformly warn against unbridled optimism.

"This is interesting, but it is not definitive," says neuroscientist Steven A. Johnson of the University of Southern California in Los Angeles. "We need to be cautious," he adds, pointing out that additional research must confirm the findings, which could result from unintentional bias or a statistical fluke.

In the new study, described in the February *NEUROLOGY*, Breitner and his colleagues studied 50 sets of elderly twins — 26 identical pairs and 24 fraternal pairs. At least one sibling in each pair had been diagnosed with Alzheimer's. In some pairs the matching twin had developed the disease at a later date, and in others the sibling remained healthy. By recruiting twins, the team had a model that automatically controlled for many genetic factors associated with Alzheimer's disease.

The researchers then homed in on the habits of each study participant, including the use of anti-inflammatory drugs that are often used to treat arthritis and other inflammatory disorders. Those drugs included steroid medications, the so-called nonsteroidal anti-inflammatory drugs such as naproxen and ibuprofen, and even the common aspirin tablet. The researchers talked to the twins directly or relied on interviews with close family members.

A statistical analysis revealed that twins who had used anti-inflammatory drugs on a regular basis for at least 1 year were four times more likely than twins who had not used such drugs routinely to remain healthy or develop the disease later than expected. This finding suggests that these drugs can block or push back the onset of Alzheimer's disease, Breitner says. Identical

twins who relied on such medication were 10 times more likely to gain such protection from this neurological disease, the team found.

A pilot study adds more evidence to the file on anti-inflammatory drugs and dementia. McGeer, Joseph Rogers of the Sun Health Research Institute in Sun City, Ariz., and their colleagues reported last August that indomethacin (a nonsteroidal anti-inflammatory drug) appeared to stave off the expected cognitive decline in 14 people who already had Alzheimer's.

Clinical trials provide the only data that can show whether such drugs really will help people with Alzheimer's disease, Rogers notes. However, his study

was too small to be conclusive. Only a very large controlled trial can determine whether anti-inflammatory drugs will provide the first real hope in the fight against Alzheimer's disease, he says.

Until then, researchers advise against a strategy of self-medication. Even aspirin, a seemingly benign over-the-counter anti-inflammatory, can cause internal bleeding and ulcers, especially if taken every day, Rogers warns.

Progress in science can seem painfully slow to the general public, Rogers concedes. Yet if a large clinical trial gets rolling, the data could settle the case for anti-inflammatory drugs within 5 years, he notes.

— K.A. Fackelmann

Rain-forest trees exhibit high turnover

For trees in tropical forests, life has sped up since the 1950s.

Even in areas largely untouched by natural calamities or humans, the annual death rate of these trees has accelerated over the past 45 years, particularly since the 1980s, researchers write in the Feb. 18 *SCIENCE*. However, the number of trees has remained stable at the 40 sites studied because the pace of new tree growth has also quickened, assert Oliver L. Phillips and the late Alwyn H. Gentry of the Missouri Botanical Garden in St. Louis. Gentry died in an airplane crash in Ecuador last year.

The two estimated annual death and growth rates using data that they and other scientists collected between 1934 and 1993 in Latin America, Africa, and Asia. They calculated the annual turnover at a site by averaging the percent of living trees with trunks over 10 centimeters in diameter and the percent of such trees that had died, Phillips says.

The 19 plots inventoried by researchers during two or more different periods best demonstrate that trees are coming and going faster than before, they say. At nine of these sites, turnover rates more than doubled between the first and last inventories, which spanned 6 to 38 years, says Phillips.

"Phillips and Gentry have discovered a worldwide increase in forest turnover," Stuart L. Pimm of the University of Tennessee in Knoxville and Andrew M. Sugden, editor of *TRENDS IN ECOLOGY & EVOLUTION* in Cambridge, England, write in *SCIENCE*.

The increase "is really huge," says ecologist Stephen P. Hubbell of Princeton University. But he warns that some of Phillips and Gentry's data came from forest plots that initially had fewer dead trees than normal. More trees probably died on those plots than on others while



Katie Johnson

A tropical forest along the Tambopata River in Peru's Amazon basin.

they were being studied. This may have inflated slightly the reported increases in turnover, Hubbell says.

The Missouri-based researchers speculate that the increase in carbon dioxide in the world's atmosphere may be causing the trend they uncovered. Carbon dioxide may make some trees, as well as some tree-killing vines, grow more quickly, they write.

Also, they warn that the rapid turnover may decrease biodiversity in the forests. With more trees dying, space opens up in the forest that fast-growing, light-loving trees and vines may quickly fill. Those that grow slowly and like deep shade would fare less well, Phillips says.

The work by Phillips and Gentry "moves us considerably closer to understanding the suspected links between global change and the loss of diversity," write Pimm and Sugden. However, the reasons given for the acceleration neglected some possibilities, such as how changes in global weather patterns affect turnover, they write.

Although Hubbell agrees that increases in carbon dioxide may decrease biodiversity, he adds, "It's highly unpredictable what species will be favored by carbon dioxide increases." — T. Adler