

Heavy dose of caffeine brews clues to panic disorder

Caffeine is more than a mild stimulant that adds punch to coffee and soft drinks; its ability to provoke severe anxiety in some people may provide important clues to the biology of panic attacks, according to research teams at Yale University and the National Institute of Mental Health (NIMH).

A dose of caffeine equal to about eight cups of coffee produces far greater increases in anxiety, nervousness, fear, nausea and restlessness among patients diagnosed for panic disorder than among healthy volunteers, report the Yale investigators in the *MARCH ARCHIVES OF GENERAL PSYCHIATRY*. Dennis S. Charney, George R. Heninger and Peter I. Jatlow studied 17 healthy subjects and 21 patients with agoraphobia (the fear of being alone or, paradoxically, in public places) and panic attacks or panic disorder. A panic attack is characterized by severe emotional and physical distress that usually lasts for a few minutes. It is estimated that 2 to 5 percent of the population have panic disorder — repeated panic attacks with no apparent external cause.

Fifteen of the 21 patients reported symptoms similar to those of panic attacks after receiving an eight-cup dose of caffeine. Five of the 17 control subjects reported panic symptoms.

Thomas W. Uhde of NIMH says that among the panic disorder patients he and his colleagues have studied, caffeine doses equal to about four cups of coffee bring on panic attacks in 40 percent of the subjects; healthy controls report no rise in anxiety at the same dose. But in a study published last year in *PSYCHOPATHOLOGY* that contrasts with the Yale report, the NIMH researchers observed no significant differences between the anxiety attacks of five panic patients and eight healthy controls given a caffeine dose comparable to almost eight cups of coffee.

Nevertheless, both groups say that their studies, when combined with related research, suggest that caffeine blocks the action of adenosine, a chemical that reduces the spontaneous firing of neurons in several brain regions. Both caffeine and yohimbine, a drug with similar anxiety-producing effects, may increase the flow of calcium into neurons, a process controlled by adenosine, say the Yale scientists. More calcium may activate more brain cells, they explain, leading to greater anxiety.

This is a promising research lead, notes Eric Reiman of Washington University in St. Louis, but sodium lactate offers a more established model for mimicking naturally occurring anxiety or panic attacks. Using a positron emission tomography (PET) scanner, Reiman and colleagues identified a blood flow imbalance between the left and right sides of one part of the brain in 7 out of 10 panic disorder patients (*NATURE*,

Aug. 23, 1984). This imbalance may prove to be a genetic marker for panic disorder, he says. The same seven patients were the only subjects who experienced panic attacks after receiving an infusion of sodium lactate, Reiman points out. The mechanism by which sodium lactate causes panic is unclear, he adds, but his research group is examining reactions to the substance more closely.

Not all patients with panic disorder report severe anxiety responses to caffeine,

sodium lactate or yohimbine. The 70 percent who do may represent a subgroup with specific biological problems, but it is too early to tell, says Reiman.

The definition of panic attacks is also in a formative stage. Says Heninger of Yale: "Panic researchers are having a difficult time defining the difference between anxiety symptoms and a full-blown panic attack. This is creating difficulty in interpreting the data from various laboratories."

— B. Bower

Diet and heart disease: A stronger link?

Investigations into the relationship between diet and heart disease are limited by ethics and expense: Researchers can't very well have one group of people eating lots of cholesterol-laden food for decades and maintain another group on a low-cholesterol diet. By quilting together animal studies, epidemiological research and small-scale or otherwise limited human experiments, scientists have hypothesized a link, but debate continues (*SN*: 12/22 & 29/84, p. 390).

Two studies in the March 28 *NEW ENGLAND JOURNAL OF MEDICINE* come down on the side of such a link, but neither alone is likely to be the final word.

In one study from Leiden University in the Netherlands, 39 men with at least one coronary artery choked to less than half its diameter by cholesterol deposits were placed on vegetarian diets to lower cholesterol levels in their blood. After two years, X-ray studies of their hearts revealed no increased obstruction in 18 of the 39 men, which, the researchers report, indicates that "dietary intervention may reduce the rate of coronary lesion growth."

Since the study involved snaking a

catheter into the heart to assess the blockage — a procedure that carries a small risk — no control group was followed. The researchers admit that this limits the usefulness of the study. In an accompanying editorial, David H. Blankenhorn of the University of Southern California in Los Angeles notes the same lack but observes that the study "provides the only direct information we have relating a defined diet to measured changes in coronary lesions."

The second report involved 1,001 middle-aged men in the Ireland-Boston Diet-Heart study, a novel data base that includes men in Ireland, brothers of these men who moved to Boston, and Boston sons of Irish immigrants.

The three groups had about the same rate of heart disease-related death. However, when the researchers looked back at 20-year-old records of what the men had said they were eating at the study's outset, they found that those men with high-cholesterol diets — wherever they lived — were more likely to develop heart disease. The finding, conclude the scientists from Harvard University in Boston and Trinity and University colleges in Dublin, "supports the hypothesis that diet is related, albeit weakly, to the development of coronary heart disease."

The Ireland-Boston study shows that equations taking into account how much and what kinds of food are eaten are as predictive of heart disease as is smoking, Blankenhorn told *SCIENCE NEWS*.

Other researchers, who had not yet seen the reports, were unwilling to comment on their importance. But W. Virgil Brown, an atherosclerosis expert at the Mt. Sinai School of Medicine in New York, when told some of the details of the Dutch study, said, "I would be very hesitant to make too much of that."

The studies, notes Blankenhorn, "support the need for a change in the national diet and indicate merit for vegetarian diets." But, he observes, "there is sufficient acknowledged weakness in both studies to provide grounds for rebuttal by dedicated meat eaters and opponents of a national diet change." Stay tuned. — J. Silberner

Running hot and cold

When Mt. St. Helens erupted in 1980, it melted an estimated 4.6 billion cubic feet (ft³) of snow and ice that had previously graced its slopes and unleashed a torrent of mudflows and floods on the valleys below. Partially because of this, researchers at the U.S. Geological Survey (USGS) are using radar and aerial photographs to measure the amount of snow and ice resting on other volcanos in the Cascade mountain range.

The results (all in ft³) for four volcanos, released last week in a new report, are: 156 billion for Mt. Rainier in Washington, 12.2 billion for Mt. Hood in Oregon, 5.6 billion for Three Sisters in Oregon and 4.7 billion for Mt. Shasta in northern California. According to USGS, no eruption forecasts have been issued for any of these volcanos, although none of them is extinct. □