In the U.S., brain cancer has been steadily increasing about 0.7% per year since 1973. This steady increase is noteworthy by itself. However, among people aged 65 and older, brain cancer has been increasing 2.9% each year, an astonishingly rapid rise in a cancer that is almost always fatal in the elderly. At this rate, the disease is doubling every 23 years among the elderly. Today roughly 17,500 Americans (9600 males, 7900 females) are diagnosed with new brain cancers each year.[1] During the period 1973-1990 brain cancer steadily increased in other industrialized countries as well, especially among the elderly.[2]

Naturally the question arises, are these increases real or do they simply reflect better diagnosis? Several careful studies of this question have concluded that much of the increase in brain cancer is real, and does not merely reflect better diagnosis.[3] For one thing, the steady increases began before the invention of modern diagnostic equipment. New imaging techniques (cat scans in the mid-1970s, and magnetic resonance imaging [MRI] in the 1980s) did make the diagnosis of brain tumors easier and more accurate. When cat scans and MRI became available, brain tumors formerly missed were now found; on the other hand, non-cancer brain problems formerly misdiagnosed as brain tumors could now be properly identified as something besides cancer. Furthermore, analysis has determined that the AIDS epidemic is not the cause of the observable brain cancer increases.[3]

Although the causes of brain cancers remain a mystery, in all likelihood the problem has multiple sources including dental x-rays;[4] occupational exposures to chlorinated hydrocarbons, organic solvents, paints and oils;[5] pesticides;[6] electromagnetic fields (EMF);[7] hormonal status in women;[8] and N-nitroso compounds.[9]

Because brain cancers are increasing in both men and women, occupational exposures are unlikely to be a major cause. A new study published this month suggests that the artificial sweetener, aspartame (marketed as Nutrasweet and Equal), may be involved.[10] At least half of the American people --knowingly or not--now expose themselves to aspartame in "diet" food products and soft drinks. Aspartame is 180 times as sweet as sugar, so provides sweet taste with fewer calories.

When G. D. Searle, the pharmaceutical manufacturer, sought approval for aspartame from the U.S. Food and Drug Administration (FDA) in 1973, a long controversy ensued.[11] Some scientists within the FDA suspected that aspartame might cause brain cancer in laboratory animals. If this were shown to be true, aspartame would have been banned under federal law. FDA initially approved aspartame for certain food uses in 1974, but two citizens --John W. Olney, M.D., and James S. Turner, challenged that decision and requested a full hearing. To settle the controversy, FDA established a Panel of Biochemists (PBOI) consisting of 3 qualified scientists from outside the agency. The PBOI reviewed the available data and drew conclusions from it. On October 1, 1980, the PBOI issued its decision, saying "the evidence suggested that aspartame might induce brain tumors" in laboratory rats and, accordingly, the PBOI concluded that aspartame "should not be approved for marketing until further animal testing was conducted to resolve the brain tumor issue." In response to the PBOI's findings, FDA revoked Searle's license to sell aspartame.[11,pg.38289]

However, later that same year (1981) a new FDA Commissioner, Arthur Hull Hayes, Jr., appointed by President Ronald Reagan, simply reversed the decision of the PBOI and licensed aspartame for "dry" uses as a substitute for sugar.[11] No new studies were initiated to shed light on the question of brain cancer. Under the guidance of Dr. Hayes, FDA simply reinterpreted the old data and asserted that the reinterpreted data showed that brain cancer was not a problem. Thus aspartame became a legal --though intensely controversial--food additive.

In 1983, Commissioner Hayes extended Searle's aspartame license to include its use as a sweetener in "diet" soft drinks, and aspartame sales took off. In 1985 Monsanto bought Searle, and Monsanto now aggressively markets Nutrasweet for "diet" sweeteners, selling roughly 20 million pounds of aspartame for use in the U.S. each year at $90 per pound, plus unknown quantities overseas. On average, Americans ingest 38 grams of aspartame per person per year.[12] (Meanwhile, intake of total calories per person per day in the U.S. has increased from 3300 in 1970 to 3700 in 1990, so "diet" foods and drinks are not having the desired effect, overall.)[13]

The aspartame study published this month, by John W. Olney of Washington University in St. Louis, suggests that the steep increases in brain cancer in Americans in the 1980s and 1990s may have been caused by exposure to aspartame.

Olney offers three reasons for concern:

(1) The kinds of cancer rising most rapidly in people (glioblastomas) are the same kind found in 3.8% of aspartame-fed rats in one of Searle's studies;
(2) Monsanto asserts that aspartame could not cause cancer because it breaks down into harmless constituents in the human stomach.[14] But Olney points to a 1993 study showing that aspartame can be nitrosated and therefore might be expected to become a N-nitroso compound in the human stomach. N-nitroso compounds are potent carcinogens, some linked to brain tumors.[15]

(3) Olney analyzes the National Cancer Institute's (NCI) data[1] and finds two sharp increases in brain cancers. He believes aspartame might have caused these increases because it was introduced rapidly, whereas other suspected causes of brain cancer (listed above) were introduced gradually and would not be expected to cause sharp increases. Olney says cancer requires several cell injuries, and older people may acquire many such injuries during their lives and may thus be ready to "pushed over the edge" by exposure to aspartame. This could explain the short delays between introduction of aspartame to the American diet and the rapid rises in brain cancer that Olney points to in the NCI data. (Cancers are usually delayed by a decade or more after exposure to a cancer-causing agent, but Olney points to brain cancer increases only a couple of years after FDA approved aspartame.)

Wherever the truth lies, FDA is unlikely at this point to re-examine the safety of aspartame. To do so would be, in some sense, to admit the haste --perhaps it could even be termed foolhardiness --of its earlier decision to ignore the evidence of brain tumors in rats fed aspartame.

The issue back in 1980 was this: In one Searle study, 3.8% of aspartame-fed rats got brain tumors. What was the "normal" rate of brain tumors in this strain of rat (known as Sprague-Dawley rats)? Commissioner Hayes acknowledged that all of the data available to answer this question had "flaws" (his word) because the "normal" animals had ALL been exposed to experimental chemicals or drugs, or had been fed irradiated food. However, instead of ordering new studies that would avoid such flaws, to answer this important question Dr. Hayes simply asserted that a 3.8% rate of brain tumors in aspartame-fed rats was not significantly different from the rate of brain tumors in "normal" rats.[11,pgs.38312-38315] Furthermore, when the Commissioner applied two statistical tests (of his own choosing) to the data in this study, those tests showed significant increases in brain cancers among female rats fed aspartame. The Commissioner then removed one of the aspartame-fed rats from the study, asserting that its brain tumor had not been caused by aspartame. After the removal of this rat, the cancer increases were no longer statistically significant.[11,pg.38320] Thus FDA approval of aspartame appears to have been tainted by decisions based on something other than science. It seems reasonable to ask that such approval be reconsidered now, given that human brain cancers are...
steadily and rapidly increasing.

Nevertheless, FDA has dug in its heels on this issue, and it apparently will be left to independent researchers to examine the health consequences of exposing half (or more) of the population to aspartame. Given that funding for scientific research in the U.S.--including research at academic institutions--is increasingly controlled by private corporations, and not by government or other independent sources, it is difficult to see where the necessary research funds could come from. In any case, a huge experiment is being conducted now on more than 100 million Americans. Whether anyone cares to analyze the data from this experiment, or not, remains to be seen.

--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)


Descriptor terms: brain cancer; statistics; x-rays; dental x-rays; occupational safety and health; emf; n-nitroso compounds; hormones; aspartame; nutrasweet; equal; searle; monsanto; fda; food safety; john olney; james turner; donald kennedy; arthur hull hayes, jr.; carcinogens;