Aspirin slashes colon-cancer death rates

People who regularly take aspirin cut in half their risk of dying from colon cancer, according to the largest, most definitive epidemiologic study to investigate this link. The finding suggests a relatively inexpensive strategy for battling a scourge that currently claims the lives of about 50,000 Americans annually.

The new work also adds weight to the findings of a much smaller study reported earlier this year. Although that retrospective study of about 6,000 men and women did not address cancer-survival rates, it did indicate that regular aspirin use may reduce the incidence of colon cancer (SN: 3/16/91, p.166).

Spurred by those findings, epidemiologist Michael J. Thun and his colleagues at the American Cancer Society in Atlanta correlated aspirin use and colon-cancer deaths among the 662,424 men and women they had been tracking since 1982 as part of the society's Cancer Prevention Study. Upon entering the study, participants had answered a questionnaire covering a range of behavioral, dietary and lifestyle factors, including frequency of aspirin use during the past year.

The risk of dying from colon cancer decreased with increasing aspirin use, Thun's team reports in the Dec. 5 NEW ENGLAND JOURNAL OF MEDICINE. Colon-cancer death rates among the most frequent users — those taking aspirin 16 times or more per month — were only 60 percent as high as that seen in the study's aspirin abstainers. And when the researchers controlled for risk factors such as diet, obesity and family history of colon cancer, the risk dropped to 50 percent of the colon-cancer death rate of the aspirin abstainers.

"It's an interesting finding," says epidemiologist John A. Baron of Dartmouth Medical School in Hanover, N.H. He notes, however, that the new study does not prove that aspirin itself helps prevent colon cancer. For example, he points out that side effects of frequent aspirin use, such as intestinal bleeding, may have caused members of this subgroup to seek medical attention more frequently than other volunteers, thereby increasing the likelihood that any developing colon cancer would receive early diagnosis. And early diagnosis increases the chance that a person with colon cancer will survive.

A large, randomized trial in which some people take aspirin and others take placebo pills would provide firmer evidence of aspirin's protection against colon cancer. But such a gold-standard study might be difficult to conduct, Baron says, because people who know about aspirin's widely publicized heart benefits (SN: 7/27/91, p.55) might balk at the prospect of receiving placebo pills instead.

For now, Baron and Thun remain cautious about advocating regular aspirin use for cancer prevention, since it can cause potentially dangerous side effects. At the same time, they note that aspirin may provide secondary anticancer benefits for people who already take it to manage arthritis pain or to reduce the risk of heart disease.

Even if epidemiologists can demonstrate that aspirin fights colon cancer, there remains the question of how it exerts this effect. Like other nonsteroidal anti-inflammatory drugs (NSAIDs), aspirin inhibits the synthesis of compounds called prostaglandins, which spur body cells — including colon cells — to proliferate. Thun suggests that aspirin might prevent rampant cell division — a key attribute of cancers — by interfering with prostaglandin production.

A number of laboratory studies have shown that aspirin and other types of NSAIDs inhibit the growth of chemically induced colon tumors in rats and mice. Other studies have shown that an NSAID called sulindac can shrink large-bowel polyps in people. Such polyps, though benign, can develop into cancers, Thun notes. Taken together, the individual pieces of evidence provide scientists with compelling reasons to further explore the link between aspirin and colon cancer, he contends. — *K.A. Fackelmann*

Distant gas cloud hints at early starbirth

Which came first: the birth of stars or the formation of galaxies? Without any evidence of gas molecules — a signature of starbirth — in a region distant enough to shed light on such early times, theorists have been left to speculate about this fundamental question. But new observations have dramatically narrowed the information gap — and they hint that the stars predate the galaxies.

Peering back in time at a young galaxy near the edge of the observable universe, two researchers have found a massive carbon monoxide cloud 10 times more distant than any molecular gas cloud previously detected. Their discovery, reported in the December ASTRONOMICAL JOURNAL, confirms a theory that the earliest glimmers of starbirth occurred just a few billion years after the Big Bang.

The violent explosion that most researchers believe sparked the expansion of the universe produced only two elements — hydrogen and helium. The massive stars that condensed from clumps of these primordial gases end their lives in supernova explosions, spewing much heavier elements, such as oxygen and carbon, into the interstellar medium. And whether or not such an early generation of stars predates galaxies, this material eventually gets recycled into future generations.

In the new study, Robert Brown and Paul Vanden Bout of the National Radio Astronomy Observatory in Charlottesville, Va., have found compelling evidence that carbon and oxygen existed early in the history of the universe. The intense, millimeter-wavelength emissions they detected came from an enormous quantity of carbon monoxide. The observed emissions left the distant cloud about 12 billion years ago, when the cosmos had reached only 17 percent of its current age, the astronomers say.

Brown and Vanden Bout initiated their survey after hearing about an intriguing discovery. In the June 27 NATURE, researchers who had recently observed several celestial bodies viewed in 1983 by the Infrared Astronomical Satellite reported they had found a remarkable object: a distant, irregular blob — possibly a galaxy in the throes of creation — emitting a powerful far-infrared signal. The object's enormous infrared luminosity — trillions of times that of our sun — indicated an abundance of dust. And where there's dust, Brown and Vanden Bout reasoned, there should be an even greater abundance of molecular gases — especially if starbirth fuels the infrared emissions.

The two astronomers conducted their search in July, using a 12-meter telescope atop Arizona's Kitt Peak. "The strength of the carbon monoxide signal we detected indicates that the galaxy, while still young, has already seen the birth and death of the first generation of stars," Brown says. Taking the view that the amorphous object represents a galaxy still under development, he says the new observations suggest that stars form before galaxies. The work also suggests that preexisting gas clouds drawn together by gravity may represent the primal soup from which galaxies arise.

Brown and Vanden Bout's findings indicate that galaxies may have begun forming about 12 billion years ago, says Charles J. Lada of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass. The vast quantity of carbon monoxide in the newly detected gas cloud — more than 100 times the mass of the Milky Way — further hints that this starbirth region may eventually develop into a cluster of galaxies, Lada says. Additional studies of the cloud and its environs may help astronomers piece together the shared early history of several different galaxy types, says Brown.

He and Vanden Bout detected other carbon monoxide emissions from the same cloud in October, using a telescope in Spain. This follow-up study, he says, confirms the existence of molecular gas in the distant cloud. — *R. Cowen*

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