

BIOMEDICINE

Eye disease risks

The first large-scale attempt to identify risk factors associated with various eye diseases has been conducted by Harold A. Kahn of the National Eye Institute and by Howard M. Leibowitz of Boston University School of Medicine. The investigators examined the eyes of 2,675 persons, ages 52 to 85, who had participated in the Framingham, Mass., heart disease risk study since 1948. Thus Kahn and Leibowitz were able to compare the prevalence of various eye diseases in these subjects with some 500 health-related factors already known about them. Here are some of the more valuable findings to emerge from the study:

Fifteen-and-a-half percent of the study population was found to have cataracts (a clouding of the lens of the eye interfering with vision); 8.8 percent to have macular degeneration (retinal deterioration reducing vision); 3.3 percent to have glaucoma (pressure in the eye damaging the optic nerve and thus harming vision), and 3.1 percent to have diabetic retinopathy (retinal degeneration often leading to blindness). Whereas cataracts and macular degeneration were strongly related to chronological aging, glaucoma and diabetic retinopathy were not. Thus the former two may be part of physiological aging rather than disease.

Cataract victims tended to have increased levels of phospholipids in their blood, elevated nonfasting blood-sugar levels and high blood pressure. Macular degeneration victims usually had high blood pressure, an enlarged left side of the heart and a history of lung infection. No risk factors could be found for glaucoma, perhaps because of the small number of subjects with this disease. Nor could any risk factors other than diabetes be found for diabetic retinopathy. However, over a fourth of those diagnosed for the latter had not previously been identified as diabetic.

Progress in treating adult leukemia

In spite of the impressive gains in extending the lives of children with leukemia, from six months to five years, remissions for adults with acute nonlymphocytic leukemia have rarely exceeded a year. But now some important progress is being made here too, according to a report in the July 23 LANCET.

Bruce A. Peterson and Clara D. Bloomfield of the University of Minnesota Health Sciences Center, Minneapolis, put 24 adult nonlymphocytic leukemia patients in complete remission on a weekly regimen of two drugs—6-thioguanine and cytosine arabinoside. One-third of the patients have been in complete remission for over two years, 21 percent for over three years and 12.5 percent for over four years. Median survival so far is 22.5 months.

The treatments were well-tolerated by the patients and easily given on an outpatient basis.

Cancer and cellular proteins

Cancer is known to alter several proteins on the surface of cells, but little effort has been made to determine whether it also changes proteins inside cells. So Mette Strand and J. T. August of Albert Einstein College of Medicine probed this possibility.

They compared proteins in healthy cells with those in cells infected by a DNA tumor virus or by an RNA tumor virus. As they report in the July PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, a good third of the proteins in the transformed cells differed from those in the healthy ones, regardless of which cancer virus had been used. The cancer process led to the production of either entirely different proteins from the ones normally produced or to proteins with novel sizes or charges.

BEHAVIOR

Environment and brain growth

The relationship between the brain and the environment is a complex one that scientists are only beginning to understand. Recent studies indicate that the environment can actually influence physical brain development in animals.

In a series of nine studies between 1968 and 1976, researchers report in the Aug. 12 SCIENCE that rats separated at weaning and exposed to socially "enriched" settings develop larger and more complex cortices than their counterparts placed in isolation.

For each study, male Wistar rats in the enriched conditions lived in social groups of between 6 and 12 animals in large open-meshed cages supplied daily with a variety of "toys." The rats in isolation were confined to small, individual, solid-walled cages with mesh floors and ceilings. The various test groups in each category were exposed to their environments from 18 to 120 days.

Researchers R. A. Cummins, P. J. Livesey and J. M. Evans of the University of Western Australia and R. N. Walsh of Stanford University Medical School report that greatest differences in brain development between the two groups occurred between 30 and 60 days of differential rearing. (At the end of each rearing period, the animals were killed, their brains removed and the anterior brain components weighed.)

After extensive analysis of the data, the researchers suggest that the brain-growth differentiation—most pronounced in rats with lower brain weights—is due primarily to deprivation among the isolates. They hypothesize that there are groups of neurons within the animal brains that "will fully develop only in the presence of adequate amounts of sensory stimulation." Isolation, they suggest, retards development of such neurons by sensory deprivation.

The great American blender

America has historically prided itself on being a melting pot, capable of assimilating great masses of people from different backgrounds. While many ethnic groups manage to maintain some of their own culture and characteristics, substantial acculturation into American society cannot be totally avoided. This has its good and bad points.

Among the negative aspects may be the adoption of American drinking habits. In the case of contemporary Italian Americans, Howard T. Blane of the University of Pittsburgh reports that such families have gradually cut down on the practice of drinking small and moderate amounts of wine with meals. Rather, many have taken to the rather popular American custom of "peak drinking"—consuming five or more drinks at one time. Unfortunately, some urban Italian Americans are still influenced by the frequency pattern they practiced when drinking wine with meals, Blane says in the July JOURNAL OF STUDIES ON ALCOHOL.

In his study of "a tightly-knit Italian American community on the Eastern seaboard," Blane reports that "urbanized third generation Italian Americans differ little from the national U.S. population with regard to the occasional consumption of five drinks or more at a time." However, he notes that in the "frequent heavy drinking" classification, Italian Americans appeared twice as frequently as the rest of the population.

Contemporary Italian women consume much more distilled spirits (40 percent of their alcohol consumption) than their first generation counterparts (9 percent), according to the study. However, while wine has decreased in use, it remains the preferred beverage of third-generation Italians.

While Blane emphasizes that his research was performed in only one city (where 92 percent of the people are Italian), he says that similar results have been obtained in different sections at different times, indicating that the findings apply "at least to urban Italian Americans."