

Vitamin slows advancing blindness from RP

It starts as an inability to distinguish features at night. Before long, retinitis pigmentosa (RP) leaves its victims with tunnel vision or no sight at all. Though a cure for this inherited disease remains elusive, Boston-area researchers reported this week what appears to be the first successful treatment. Large daily supplements of a particularly stable form of vitamin A slowed the inexorable degeneration of retinal function that characterizes RP.

"This is exciting news," says Carl Kupfer, director of the National Eye Institute in Bethesda, Md. Worldwide, roughly one in every 4,000 persons suffers from the disease.

Adds Alan M. Laties, chairman of the RP Foundation's scientific advisory board, "Although not a cure, [vitamin A supplementation] will improve the quality of life, potentially adding many years of useful vision."

While monitoring RP patients in the early 1980s, ophthalmologist Eliot L. Berson and his co-workers identified a small

group who had been supplementing their diet with large amounts of vitamin A, vitamin E, or both. And compared to patients taking ordinary multivitamin supplements or no supplements at all, those taking high doses of A or E sustained far less retinal degeneration over a two-year span, as measured by an electroretinogram (ERG). This test determines the health of photoreceptors by measuring electrical activity of the eye's photoreceptor cells, known as rods and cones.

The finding intrigued Berson, of the Berman-Gund Laboratory for the Study of Retinal Degenerations at Harvard Medical School in Boston, because high ERG values correlate with healthy photoreceptors. However, since most of the megavitamin users took both A and E, Berson's team couldn't determine the relative value of the vitamins.

So they initiated a six-year study of 601 RP patients between age 18 and 49. The researchers randomly assigned each patient to one of four daily supplements: 15,000 international units (IU) of vitamin

A in the form of retinyl palmitate; 15,000 IU of A plus 400 IU of vitamin E; 400 IU of vitamin E; or trace amounts of both vitamins. Annually, the Harvard researchers assessed ERG values, visual field (peripheral vision), and visual acuity in each patient. Neither patients nor doctors knew which treatment any individual had received.

In the June ARCHIVES OF OPHTHALMOLOGY, Berson's team reports finding a slower drop-off in ERG values among patients receiving 15,000 IU of vitamin A. Those getting large amounts of both vitamins did less well, but better than patients receiving just trace amounts of each.

The big surprise, Berson says, was that retinal degeneration proceeded most quickly in patients given vitamin E supplements. Although the data weren't powerful enough to prove that E posed a risk to patients with the most advanced retinal degeneration at the start of the study, Berson says that "anybody reading this paper would conclude that RP patients shouldn't take high doses of E."

Overall, the new data suggest, the average RP patient in this study beginning vitamin A therapy at age 32 will retain some useful vision until age 70 — seven years longer than one taking no supplements and 12 years longer than a patient taking 400 IU of vitamin E daily. Though the Harvard researchers now recommend vitamin A therapy for most RP patients, they caution against taking any form but the palmitate — and then only under an ophthalmologist's supervision.

Vitamin A plays a functional role in sight by latching on to a protein in the rods and cones. When exposed to light, the vitamin changes shape — the initial step in relaying light-detection signals to the brain. "But the mechanism by which vitamin A helps the retina in this disease remains unknown," Berson notes. Vitamin E's role also remains unknown, although Berson's group observed that patients taking vitamin E had lower concentrations of A in their blood, suggesting that E may inhibit the body's absorption or transport of A.

In an accompanying editorial, Robert M. Massof and Daniel Finkelstein of Johns Hopkins University in Baltimore describe the new study as "a tour de force in experimental design, execution, and statistical analysis." However, they advise caution in prescribing vitamin A, arguing that the slower declines in ERG readings of A-supplemented patients may not necessarily translate into a slowing of their loss of visual function.

Berson disagrees. "The editorial implies that visual field is the last word on how people are doing," he told SCIENCE NEWS. "But electrical recording should be the last word — because it's much more sensitive." Indeed, he argues, ERG data are so sensitive they can detect changes that may take 10 or 15 years to confirm through visual-field tests. — J. Raloff

Cholesterol continues 30-year decline

The war on heart disease continues, but there's good news from the cholesterol front: The latest federal survey of U.S. health and nutrition reveals a significant and continuing decline in the amount of artery-clogging cholesterol flowing through America's collective bloodstream.

This decline in blood cholesterol, which can block the arteries that supply the heart with blood, may ultimately reduce individuals' risk of coronary artery disease in the United States by as much as 32 percent, according to Manning Feinleib, director of the National Center for Health Statistics (NCHS) in Hyattsville, Md.

Also this week, the National Cholesterol Education Program (NCEP), coordinated by the National Heart, Lung, and Blood Institute in Bethesda, Md., has released new guidelines for the diagnosis and treatment of high cholesterol.

Two studies based on the recent survey and the revised NCEP guidelines appear in the June 16 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

According to NCHS researchers, virtually all of the decline in blood cholesterol — 8 percent since 1960 — was in low-density lipoprotein (LDL), the carrier molecule that deposits cholesterol on artery walls, leading to heart disease (SN: 9/9/89, p.171). In contrast, high-density lipoprotein (HDL), which ferries cholesterol to the liver for disposal, rose only 1 percent in the same period.

More than half of the LDL decrease

occurred in the period from 1976 to 1991 — coinciding roughly with increased public-education programs to convince Americans to reduce their intake of dietary fats. Indeed, since 1978, cholesterol counts have fallen, on average, from 213 milligrams of cholesterol per deciliter of blood to 205. According to NCEP guidelines, a cholesterol count of 200 or less in a normal adult is considered "desirable."

The NCHS studies are based on data from four national surveys that gathered health and nutrition information on thousands of Americans. The most recent National Health and Nutrition Examination Survey (NHANES III) covered the period 1988 to 1991 and involved 8,000 men and women. Participants were black, white, or Mexican American.

The new NCEP treatment guidelines, building on a previous incarnation published in 1988, reaffirm some classic themes in anticholesterol therapy and reflect the most current scientific data, NCEP officials explained at a June 15 press briefing in Washington, D.C. For example, the new guidelines still mark LDL as the primary target of cholesterol-lowering therapy, but they urge physicians to determine the amount of HDL cholesterol in patients' blood, even labeling it a "negative risk factor" for heart disease. In other words, increasing HDL can reduce a person's risk of developing blocked coronary arteries and the debilitating heart attacks that may follow.

— D. Pendick