BIOMEDICINE

From the American Heart Association's science writers' forum in Newport Beach, Calif.

Blood pressure gene identified

A specific gene locus that seems to code for the high blood pressure in inbred rats on high salt diets has been identified by John P. Rapp and co-workers at the Medical College of Ohio in Toledo. Called Hyp-1, for hypertension, the gene locus directs production of a specific enzyme in the adrenal glands, which in turn regulates the production of the steroid 18-hydroxy-deoxy-corticosteroid. Similar hormones are known to induce high blood pressure in human beings. Cross-breeding experiments with rats that developed high blood pressure on salty diets and those that did not, showed that the gene locus accounts at least partially for the higher blood pressure in the salt-sensitive laboratory animals.

Understanding the biochemical pathways involved in blood pressure control could lead to better methods of treatment and diagnosis of hypertension, says Rapp.

Aspirins vs. stroke

Two aspirins twice daily may help avert cerebral strokes in otherwise highly susceptible individuals, according to the results of a three-year-long survey carried out at the University of Texas Health Sciences Center in Houston and at several other medical centers. Of 178 patients who had suffered mild strokes known as transient ischemic attacks (TIA's), only 12 percent had additional TIA's while they were taking aspirin. In a control group that received placebos for the same period, the additional TIA rate was 42 percent, according to William S. Fields of the University of Texas.

A similar study, still in progress in Canada, indicates that aspirin therapy reduces death and disability from stroke in patients with previous TIA's to about half the expected level, he said.

Junk food hypertension

Junk food diets eaten by many American school children could be contributing to the high blood pressure rate, says Gerald S. Berenson of the Louisiana State University School of Medicine in New Orleans. Spider monkeys were fed for eight weeks on chow containing sugar and salt at the same high levels found in the soda pop-hamburger-potato chip diets scarfed down by school age children. The monkeys developed abnormally high blood pressure levels when compared to monkeys on standard diets.

In addition, Berenson said, sugar and salt in combination had a greater blood pressure elevating effect in the monkeys than did salt alone. He and his colleagues are following up the diet-hypertension link in a study involving a large number of school children in Bogalusa County, La.

HDL and Atherosclerosis

New evidence in various labs that "high density lipoproteins" (HDL) inhibit cholesterol accumulation in arterial cells could lead to a new approach to treating or averting atherosclerosis, says Daniel Steinberg of the University of California School of Medicine at San Diego. Recent studies at UCSD and elsewhere show that HDL decreased the rate at which low density lipoproteins (LDL) were taken up by smooth muscle cells cultured from the walls of pig arteries. When incubated with LDL alone, the same cells increased their total cholesterol content while the cholesterol buildup could be prevented if HDL was present simultaneously. Other researchers at the National Heart, Lung and Blood Institute have shown that the HDL molecules most effective in competing with LDL contain a significant amount of "arginine rich protein" called apoprotein E.

It is still not clear whether high HDL levels prevent the onset of atherosclerosis in animals or humans, Steinberg said. The ultimate proof will require long-term clinical study of a large group of patients in which home diet or drug treatment is used to increase HDL levels, and then it will be determined what effect they have on reducing mortality and morbidity from the disease, he said.

No isometrics for heart patients

Heart disease patients should avoid the use of isometric or "static" exercises to keep fit, according to Jere H. Mitchell of the Texas Health Science Center at Dallas. Experiments with cats that were trained to carry out isometric exercises, such as pushing one paw against a bar, resulted in an abrupt rise in blood pressure and an increased demand for oxygen in the heart. The studies indicate that during isometric exercises signals from the brain work through the exercised muscle and then through the heart's own neurological control centers, placing an added strain on the heart and blood vessels. For the average person with no underlying heart condition, isometric exercises are very useful, but for the heart patient, they are "potentially hazardous," Mitchell warns.

Possible atherosclerosis factor isolated

A protein which appears to enhance the cellular proliferation that leads to hardening of the arteries (atherosclerosis) has been isolated and partially identified by Russell Ross and colleagues at the University of Washington in Seattle. The substance, characterized as a "relatively low molecular weight, heat stable, basic glycoprotein," was isolated from blood serum. Test tube and animal studies indicate that the substance is released from blood platelets and initiates multiplication of the endothelial cells that line the inner walls of previously damaged arteries, Ross said.

Certain drugs appear to inhibit the platelets from releasing the substance in the damaged arterial areas, suggesting a new therapeutic approach to the treatment of atherosclerosis. Other approaches could involve protecting the endothelial areas from injury or developing agents that inhibit the release of the glycoprotein, Ross speculated.

Holiday heart syndrome

Heavy holiday "spree" drinking can lead to serious heart abnormalities, says Timothy J. Regan of the College of Medicine and Dentistry of New Jersey in Newark. When coupled with underlying alcoholism, holiday drinking bouts frequently trigger abnormal heart beats, called cardiac arrythmias, which frequently require hospitalization. Studies with 24 patients who experienced the "holiday heart syndrome" indicate that abstaining from alcohol can correct the condition, he said. The findings suggest that when physicians encounter a patient with an unexplained arrythmia, it would then be appropriate to look for the heavy drinking connection and treat the conditions accordingly, said Regan.

Although some studies indicate that small amounts of alcohol taken daily can help avert atherosclerosis, he pointed out that as little as 6 ounces of Scotch taken daily over a two-year period can weaken the force of heart muscle contractions in normal individuals.