New Findings on No. 1 Killer

For years, researchers have thought that tiny dots and streaks of fat on the inner walls of arteries eventually became the giant blockages of atherosclerosis, the No. 1 killer of adults in this country.

But now, at the end of the first phase of a massive national study into how the disease develops, the first findings cast doubt on that theory.

The results suggest that there is no simple, logical progression, as had been thought, from minute fat deposits into the more important raised lesions that seriously restrict or block blood flow through the arteries.

This evidence, while far from complete, should force researchers to re-think current beliefs about how atherosclerosis develops, and therefore, how it might be halted.

"I think we now have a basis to question the idea that there is a longitudinal progression from fatty plaques on the arterial wall to true raised atherosclerotic lesions," explained J. Fred Cornhill, associate professor of surgery and head of the Ohio State University portion of the study. His group is just part of a seven-year National Institutes of Health-supported study underway at 16 medical centers in the U.S.

The findings came at the end of the first phase of the project and were based on about 350 individual cases.

Investigators plan to review more than 3,000 cases over the length of the study.

Earlier studies of the origins of atherosclerosis have concentrated heavily on statistical surveys and involved heart disease patients. This new project uses tissue from the aortas of young, apparently healthy accident victims to search for early signs of the disease.

Based on the evidence so far, Cornhill says that only 5 percent of the cases in the study showed early fatty streaks that later go on to become the actual dangerous raised lesions.

"At least in this age group (15 to 35 years old), we have 95 percent of these young people not developing clinical atherosclerosis," Cornhill said. The few cases that did show such development were confined to the 30- to 35-year-old age group.

"The dogma in the pathology of atherosclerosis has been that you go from fatty dots and streaks to fatty plaques and later on, to raised atherosclerotic lesions, all in a more or less linear progression," Cornhill said.

"But at least in this preliminary study, we found few of the lesions go on to develop true atherosclerotic lesions, the ones that are clinically important. The rest of them are really pretty benign," he says.
Researchers explore heart disease causes

Fats lining artery walls are major problem

By Cole E. Hatcher
Lantern staff writer

Cardiovascular disease is the No. 1 killer of adults in the United States, but Ohio State researchers are working to reduce the number of its victims by participating in a nationwide study on causes of heart diseases.

Jan Handley, a spokeswoman for the Franklin County Branch of the American Heart Association, said about 63.4 million Americans have some type of cardiovascular disease.

One of the major underlying causes of these diseases is atherosclerosis. Atherosclerosis is a condition in which fats, such as cholesterol, are deposited in the innermost walls of the arteries. This causes the arteries to thicken, said J. Fredrick Cornhill, associate professor of surgery and associate director of OSU's Laboratory of Experimental Atherosclerosis.

Thickening of arteries reduces their elasticity, narrows their passageway and interferes with blood flow.

Cornhill said atherosclerosis results in heart attacks, strokes and peripheral vascular diseases. Peripheral vascular diseases can result in a decreased ability to walk and may even result in gangrene and amputation, he said.

Cornhill said atherosclerosis is the most common form of arteriosclerosis, or hardening of the arteries. Arteriosclerosis is also the main cause of coronary artery disease, which is the narrowing and hardening of the arteries that supply blood, oxygen and nutrients to the heart.

Cornhill said at one time researchers believed atherosclerosis progressed in a linear fashion from flat, fatty dots and streaks that were incorporated into the walls of the arteries, to protruding masses of fatty tissue deposits called plaques, to raised atherosclerotic lesions that blocked blood flow through the arteries.

Cornhill said researchers at Ohio State and at 15 other medical centers around the country no longer believe this to be true.

"What we've seen is that there doesn't appear to be a linear progression," Cornhill said. "Some of the fatty streaks appear to go on to become raised lesions, but the large majority of them sit there quite happily and don't do any harm."

Cornhill said researchers are now trying to determine if there are two different types of fatty streaks, one type that goes on to form raised lesions and one type that does not.

He said researchers do know that both the fatty streaks and the lesions occur at the same places on the arterial walls.

Raised lesions occur when the cells that line the arterial walls form a cap over fat deposits. As the lesions increase in size, Cornhill said they tend to crack and form ulcerated surfaces. If this occurs, he said blood clots can form and trigger heart attacks.

Cornhill said the researchers participating in the study based their conclusion on a data review of about 350 cases. He said the researchers hope to collect data on more than 3,000 people before the study is completed.

All of the data comes from people between the ages of 15 and 35 who died as a result of suicide, homicide or vehicular accident.

Cornhill said this group was being used because the researchers felt it would best approximate the population as a whole. He said OSU researchers are doing their studies in cooperation with the Franklin County Coroner's Office.

A second finding of the study is that high levels in the blood of a specific type of cholesterol called HDL might help to prevent deposits of fatty plaques from building up in the arteries. HDL stands for high density lipoproteins.

It is believed that HDL can remove excess fat from arteries and take it to the liver, where it will be converted into waste materials, Cornhill said.

He said HDL is built up in the body through exercise and the moderate intake of alcohol.

A second type of cholesterol, LDL, is believed to take the fat from its production site in the liver to the arteries. Cornhill said LDL stands for low density lipoproteins.

Cornhill said the best way to reduce total cholesterol intake, including LDL intake, is through dietary measures. This means eating less red meat, less butter, fewer eggs and eating more fish and poultry, he said.

A third finding of the study showed that smokers had a 12 percent greater chance of developing raised lesions than did nonsmokers. Cornhill said, however, that only 87 cases were reviewed for this portion of the study.

He said it is not known how smoking increases people's risk for getting the raised lesions, but it is hypothesized that the carbon monoxide and the nicotine damages the cells that line the arterial walls. This allows more cholesterol to enter the walls.

These cells, called endothelium, are the major barrier of cholesterol transport into the arterial walls, Cornhill said.

The atherosclerosis study, which began two years ago, will last for more than seven years. It is being funded by the National Institute of Health.

Cornhill said Ohio State will receive a total of about $2 million for the project. He said the total overall funding will be about $20 million.

He said the project consists of three phases and that the first phase, a project feasibility phase, has been completed. Phase two is a data collection phase. This phase has begun and will take about three and a half years to complete, Cornhill said.

He said phase three is a data analysis phase.

Handley said at one time cardiovascular diseases killed more people than all other causes of death combined, but that this is no longer true because of a 32.5 percent drop in the number of people who died from cardiovascular diseases during the past 15 years.

Handley said cardiovascular diseases killed 986,000 Americans in 1984. This accounted for 48.2 percent of all deaths that year.

She said cardiovascular diseases caused 48,885 deaths in Ohio in 1985. This accounted for 49.5 percent of all deaths in Ohio that year.
Event to raise funds for heart research

By Rebecca Mugler
Lantern staff writer

The American Heart Association is sponsoring an “Affair of the Heart” on Valentine’s Day. Proceeds raised will help support heart research conducted at the Ohio State University, Ohio University and Children’s Hospital.

The event will be held at 7 p.m. Tuesday at the Palace Theatre, and the emcee is Jack Willey from the Columbus Dispatch along with Gail Hogan of WCMH’s PM Magazine.

An Affair of the Heart will feature a sketch artist, a magician, live music from jazz artist Vince Andrews and the movie classic "Young at Heart" starring Doris Day and Frank Sinatra.

Chuck Heald, communications director of the American Heart Association, said they will supply a cash bar, piano player and free popcorn.

Raffle tickets will be sold and the grand prize is a night at the Hyatt Regency Hotel in the presidential suite.

Heald said research will be granted 33 percent of the money earned with the remaining amount going to community education programs.

The American Heart Association contributes nearly $600,000 each fiscal year to the Ohio State University Heart Research Fund, Heald said.

Heart disease is America’s number one killer and the American Heart Association has declared February as American Heart Month.

“Few people realize that heart disease kills twice as many people as cancer and AIDS combined,” said Scott Armstrong, chairman of the event.

“February is a big month for the American Heart Association and a big reason for the event is just to raise awareness,” said Don Calfart, a member of the American Heart Association and a graduate student in business.

While the purpose of the event is to raise money, Heald said he also wants people to come and have a good time.

This is the second year the American Heart Association has sponsored such an event in Columbus, Heald said.

“Akron has been doing a Valentine’s Day event for the past eight years and the Columbus chapter decided to try it here,” he said. “Last year we met our goal and this year we’re trying to build on that.”

The American Heart Association is the national philanthropy for the Alpha Phi Sorority which will be assisting in the night’s activities, said Laura Porco, a sophomore majoring in journalism and the administrative assistant for the sorority.

“It looks like it’s going to be a great evening,” Porco said. “We had a lot of fun doing it last year, and it looks like it’s going to be a lot of fun this year.”

Heald said the alumni of Alpha Phi Sorority has raised over $100,000 for the American Heart Association in the last 16 years through various fund raising activities.

Tickets for the event are $7.50 per person or $15.00 per couple.

“It’s a unique event,” Heald said. “It’s so much more than just candy and flowers.”
Views differ in heart funding

By Cynthia Hall Henderson
Lantern staff writer

The director of Ohio State University cardiology research, said clinical researchers are receiving less funding from the American Heart Association, because the AHA has been awarding more grants to biotechnology research.

“Traditional research groups such as our cardiology division are receiving only a very small fraction of research dollars from the American Heart Association,” said Robert J. Cody, director for research affairs for the division of cardiology for University Hospitals. “The value of clinical research has become de-emphasized while at the same time the nontraditional biotechnology research is emphasized more.”

Cody said the biotechnological areas include molecular biology, molecular genetics or other kinds of biochemistry. He said areas like physiological chemistry, bioengineering and the College of Engineering receive the bulk of AHA funding.

“There is a concept that this money (AHA funds) goes to direct patient care or patient research utilization, and that is totally erroneous,” Cody said. “Within the last three to five years, there has been an even more radical shift in how this funding is used.”

Chuck Heald, communications director for the American Heart Association in Columbus, said 33 percent of the AHA’s fund-raising dollars goes to research. He said research is the AHA’s first priority.

In 1988, 26 researchers at Ohio State received about $500,000 of the $600,000 of the AHA’s fund-raising dollars, he said. AHA money was awarded for research in congestive heart failure, smokeless tobacco, high blood pressure, the artificial heart, cholesterol and biomedical research.

Gerald Brierley, chairman for the department of physiological chemistry and chairman of the American Heart Association Ohio Affiliate Research Peer Review Committees, said he does not agree with Cody that there is a trend by the AHA to award more grants to the biotechnical fields, he said.

Brierley said the AHA reviewed about 140 grants in many different areas and will fund about 70 of the grants.

“It’s impossible to identify any trend as to what field is concerned. I think maybe Dr. Cody’s people didn’t get funded as much as he wanted, and he is upset with that,” he said. “The heart association over the years has done a good job of funding the best grants that come in, and I think that’s what happened this time.”
Students’ diet may lead to heart disease

By Matt Wagner
Lantern staff writer

High cholesterol foods that make up a typical meal for college students could lead to heart disease later in life.

Nancy Vess, senior dietitian at University Hospitals, said students eat foods with high fat and cholesterol levels, and not enough fiber.

Fast food sandwiches, cheaper cuts of meat, snack foods, cheeses and desserts are all high in fat and cholesterol. These are the foods that students eat, said Vess.

High fat and cholesterol diets have been linked to heart disease, she said.

"Many students buy foods high in fat and cholesterol because of their low budgets," Vess said.

Cynthia Vallo, program assistant for the American Heart Association in Columbus, said the amount of damage done to a person’s heart is determined by the duration of his or her bad eating habits.

"Some kids can eat all the garbage they want and their cholesterol levels will be normal, while others will soar," she said.

Vess said if students are concerned about heart disease, they should reduce consumption of all fats, especially saturated fats, and cholesterol.

"For every 1 percent reduction in cholesterol there is a 2 percent reduction in the risk of heart disease," she said.

She said saturated fats are found in milk, fatty beef, palm and coconut oils, and bread products.

Vess suggests students be more aware of their food intake.

• Eat more fruits and vegetables. Four to six servings a day are recommended.

• Increase high-fiber foods like whole grain bread and oat bran products.

• Reduce consumption of meat. Six to eight ounces a day of lean red meat, fish or skinned poultry is recommended.

Vallo said convenience foods make up a large portion of student diets and these aren’t always the most nutritious.

She said students with bad eating habits who drink a lot of beer and don’t exercise are setting themselves up for heart disease.
IMAGER OPENS WINDOW FOR BETTER VIEW OF HEART

COLUMBUS, Ohio – Cardiologists at The Ohio State University Medical Center are using a new, high-speed imaging device that enables them to view potential heart problems in real time, even with a vigorously beating heart. The latest screening device is in use at only a few medical centers in the country; however, physicians say its use may revamp the way many heart problems are detected.

By using this advanced magnetic resonance imaging (MRI) technology, doctors can image the heart’s structures, visualize the effects of blockages in the coronary arteries, and measure blood flow in vessels leading to the heart. Also, the effects of blockages can quickly be evaluated by imaging the blood supply in the heart and analyzing the contracting motion of the heart as it pumps blood to the body.

No other single technology can perform all these functions on a beating heart.

Dr. James Ryan, a cardiologist at University Medical Center, says the ability to accurately image a beating heart with an MRI enables many heart problems to be diagnosed non-invasively at a much earlier stage than current methods.

“The high-speed scanner allows us to see the heart in a new way,” said Ryan.

“High-resolution images of the beating heart are transmitted to a monitor at a rate of 20
views per heartbeat, giving us the greatest opportunity yet to observe actual
abnormalities."

The heart scan takes only a few minutes to perform and does not use radiation like
other tests. The cost of the scan is comparable to other forms of testing.

During the imaging, the patient lies inside a hollow, cylindrical magnet and is
exposed to shorts bursts of energy within a powerful magnetic field. The bursts stimulate
hydrogen atoms in the patient’s heart to emit signals, which are detected and analyzed by
computer to instantly create a “slice” view of the heart.

A recent study in the New England Journal of Medicine demonstrated the
effectiveness of the new technology by imaging poor circulation in the heart muscle of
symptomatic women, after cardiac catheterization studies failed to demonstrate blockages
in the major coronary arteries.

Ohio State will be participating in a national study using the new cardiac imager
to measure blockages in the coronary arteries of women.

The study will compare the effectiveness of the MRI to more traditional testing
methods in detecting poor circulation in the hearts of women.

The study is in collaboration with University Medical Center’s Advanced
Biomedical Imaging Institute, a partnership between Ohio State and General Electric
Medical Systems.

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