

For April 4, 2000

Heart to Heart Talk

With Phillip S. Chua, M.D.

Arteriosclerosis

What is arteriosclerosis?

Arteriosclerosis is the medical term for hardening of the arteries. This is the process that leads to stenosis (blockage) of the arteries in any part of our body which results in insufficient blood (oxygen, nutrition) supply to the parts affected. Example is blockage of thigh artery that cuts off the flow of blood to the lower limb causing gangrene of the lower leg, or blockages in the coronary arteries leading a heart attack.

Why does hardening of the arteries occur?

To some degree, it is due to the genetic make up of the individual, but to a significant degree, and in majority of the cases, arteriosclerosis is caused by self-abuse and the person's life style. There are offsprings of parents with severe arteriosclerosis who hardly have hardening of arteries even when they grow old, and there are parents who have no significant arteriosclerosis whose children have severe hardening of the arteries. The ones who develop arteriosclerosis are individuals (parents or siblings) who eat red meat, eggs, and other high cholesterol foods (having elevated serum cholesterol level), who smoke, who do not exercise, who do not know how to relax and manage daily stress in life and who get uptight so fast. Those who are under a lot of stress tend to develop hypertension (high blood pressure), which is a factor, like diabetes mellitus, that speeds up hardening of the arteries.

How does arteriosclerosis start?

Hardening of the arteries start as a blood thickening process. When we eat red meat, egg yolk and other high cholesterol foods, when we are as sedentary as a couch potato, when we smoke cigarettes, when we are under stress, our blood cholesterol goes up and blood becomes thicker. It acts like thick paint that coats and adheres to the intimal surface (inner wall) of the arteries, whose size could be as small as a round tooth pick. Just imagine how the inner wall of the small arteries could be "filled up" with blood clots and eventually clogged by repeated coating of

this thick blood as it circulates through these arteries. The thickened blood adherent to the inner wall of the artery becomes harder and harder in consistency, in stages, from pasty, to rubbery, to scar-like, to rope-like, and finally to concrete-like calcium deposits, we call plaques. Not even a surgical knife can cut through this hard calcified plaques on the wall of the arteries. As years go by, the build up continues until the lumen (channel) of the artery is totally blocked, cutting the circulation to the parts they supply blood to.

How does high cholesterol hasten hardening of the arteries?

Hypercholesterolemia (elevated serum cholesterol level) makes the blood thicker by increasing platelet aggregation (blood clotting factor clumping together), thus making the individual more prone to blood clot formation and arteriosclerosis. The Low Density Lipoprotein (LDL, the bad cholesterol) also makes the inner walls of the arteries more susceptible to plaque formation, besides having other negative effects on the cardiovascular system. This is why we recommend fish (high in Omega 3, low in cholesterol), instead of red meat, like pork and beef (which are very high in cholesterol even after trimming the fat off), for our staple diet.

Is hypercholesterolemia genetic?

Only one in 500 people has the genetic defect causing “congenital” hypercholesterolemia. So, only 2% of us truly have an excuse or an alibi to have high serum cholesterol level, and yet most of us have abnormally elevated cholesterol. There is no question, we are abusing ourselves. The 499 of us are obviously eating, smoking, not exercising, and drinking ourselves to a death. In the United States alone, one person dies every single minute from heart attack.

How can we maintain thinner blood?

The avoidance of the unhealthy habits we have enumerated above keeps our blood with a normal consistency for homeostasis (good natural balance). Other activities that can keep our blood thinner include doing things that make us happy, like in doing a good job at work, reading good books, singing, dancing, laughing, being with friends, taking vacations, doing charity works or helping others, developing a healthy habit of always thinking positively and appreciating the many blessings God has provided us and our loved ones. Medically, taking low-dose aspirin, Vitamins E, on top of the recommended one-a-day multivitamins and minerals, under a physician’s supervision will thin blood to a healthier level and slow down hardening of the arteries.

Does eating fish, instead of red meat, help slow down aging?

Fish contains Omega 3 Oil which acts as antioxidant that help rid our system of free radicals, and like the healthy habits and activities we mentioned above, fish oil is a blood thinner. Indeed, thinning our blood seems for be key to slowing down arteriosclerosis. Stress and those bad habits makes our built-in pharmacy in our body produce and secrete adrenalin and other harmful chemicals, speeding arteriosclerosis, while the healthy (happiness-inducing) activities listed above (fish diet, no red meat or egg yolk, no smoking, exercise, stress management and enjoying a happy life style, etc.) leads to the production and secretion into our blood circulation of endorphins and enkephalins that are opium-like substances that give us a healthy natural “high.” This slows down arteriosclerosis and aging.

Are we really as old as our arteries?

Yes, indeed, we are as old as our arteries. Younger looking persons, regardless of chronological age, have “younger and softer” arteries all over the body. Young people who look older than their actual age have, by and large, arteries that are prematurely hardened. The skin that is deprived of normal blood supply gets wrinkled and “old-looking.” Our health and well-being are determined to a great extent by how normal our blood components and blood circulation to all the organs, tissues and cells of our entire body are, from the brain down to our toes.

Does hardening of the arteries hasten the process of aging?

Yes, living tissues, our body cells, age according to our individual biological clock that is predetermined by our genes. However, we can “speed up” this process and age faster by having an unhealthy lifestyle. Therefore, while genetic plays a role in aging, how fast we grow old in our looks and physiology depends a lot on how we live and take care of our body and mind. While we perhaps cannot live beyond our pre-set genetic clock, we can at least optimize our longevity by not cutting it shorter through an unhealthy lifestyle.

Can we then slow the aging process?

To a good degree, yes, by leading a healthier lifestyle (by avoiding disease causing factors, like high-cholesterol diet, lack of exercise, cigarette smoking, excessive alcohol, inability to relax and manage stress by behavioral modification and philosophical reinforcement) as we stated earlier. The countless food supplements, pills, capsules, juices, etc. on the market claiming to slow down aging are all nothing less than a hoax and a scam to bilk the unsuspecting public. Future scientific breakthroughs in medical technology will someday allow us to genuinely “slow down more dramatically or even stop” our biological clock. But, let us not wait because that medical leap might take another 50 to a hundred years. Let us start prudent changes in our lifestyle today in order to live healthier, happier and longer.

Our readers are invited to send in their medical questions for possible inclusion in future issues of this column. Mail your questions to the author at Heart to Heart Talk, c/o Cebu Cardiovascular Center, Cebu Doctors' Hospital, Osmena Boulevard, Cebu City, Philippines, or e-mail them to heart@chua.net

Philip S. Chua, M.D. is the Chairman of Cardiovascular Surgery of the Cebu Cardiovascular Center of the Cebu Doctors' Hospital, Cebu City, Philippines, where he and his team perform open heart surgery. He trained under the world-renowned heart transplant surgeon, Denton A. Cooley, M.D., at the Texas Heart Institute in Houston, Texas. He is the President of the Philippine Heart Cebu, and of the Cardiovascular Surgery Associates in Munster, Indiana, U.S.A., where he also practices and does cardiac surgery.