

FAMILY HISTORY OF HEART DISEASE: THE PREMATURE CORONARY

“My father died of a heart attack at the age of 50, will I share his fate?”

In this age of medical genetics and self-awareness, we wonder what we can do to protect ourselves from our parent or grandparent’s medical maladies. The sons and daughters of parents who died of heart disease at early ages (before 55 in a father or before 65 in a mother) often mentally count down as their own birthday approaches that of their parent when catastrophe struck. The ensuing anxiety often paralyzes their efforts to seek the kind of medical advice that could prevent their own event.

INHERITING HEART DISEASE:

Medical genetics (genomics) has achieved spectacular growth and innovation in the last decade. The ability to sequence any one person’s complete genome can be performed more rapidly and more cheaply than ever before. This process can generate mounds of information about one person’s genetic makeup. Unfortunately, the remaining steps in the process of translating this information into an action plan for improving health outcomes are just beginning to bear fruit. A heart attack gene has been isolated in one family but understanding how to harness that information to treat those affected and how this is related to the population at large is still the subject of intensive research.

Another part of the complexity of this issue comes from the old issue of nature vs. nurture. For example, are you born with a gene mutation that says you will have a heart attack at an early age or did you inherit a tendency to have that early MI only if you pursue unhealthy lifestyles like eating a fast food or smoking? Did you learn those lifestyles from the parent who died prematurely and can you alter your own way of life in order to live for many years beyond his death? Did you inherit hypertension and diabetes as part of his genetic profile and will early detection and treatment alter your own future medical history?

Here is the bad news: your risk of having a coronary at an early age if your parent had one is about two times the risk of someone who doesn’t have that family history. Here is the good news: family history contributes only 15% of the extra burden compared to all of the other factors in your personal risk profile. This means that 85% of your risk can be modified by medical diagnosis and treatment.

THE PROBLEM OF ATHEROSCLEROSIS:

In some people, the process in which cholesterol plaque accumulates under the lining of all the arteries of the body starts in their 20’s. For many, the process continues during their adult lives and remains undetected until that one day when a

piece of that plaque ruptures and obstructs the flow in a coronary or cerebral artery producing a heart attack or a stroke. If you inherit a tendency to accumulate cholesterol faster than the average rate, your coronary event will happen at an earlier age.

HEART DISEASE IN THE GENERAL POPULATION:

In our society, coronary or atherosclerotic heart disease has reached epidemic proportions and affects individuals with no prior family history for heart attack. It has been estimated that the lifetime risk of developing coronary heart disease starting from age 40 is about 50% in men and 30% in women. If you reach the age of 70, future risk remains 35% for men and 24% for women.

NONINVASIVE TESTING CAN IDENTIFY YOUR RISK AND GUIDE YOUR TREATMENT

“My friend went to his doctor for a stress test and wound up with a quadruple bypass”, is an anecdote that sticks in everyone’s mind because it suggests that this is a common scenario. It is not. Many stress tests that are done to test patients at risk are negative for serious findings. Others show equivocal results that prompt the cardiologist to use medication and lifestyle management to avoid surgery and produce gradual stabilization of the underlying process.

A BRIEF SUMMARY OF NON-INVASIVE TESTING

The tests that cardiologists use to assess your risk for a heart attack are generally easy to carry out and can be performed in his office. Here is a list of these along with a brief description:

1. **LIPID PROFILE:** A 12 hour fasting cholesterol profile is obtained and analyzed for the amount and proportion of the “good” cholesterol or HDL which transports cholesterol out of artery walls and the LDL or “bad” cholesterol which is deposited in the wall to produce plaque. There are many technical variations on this blood test, which produces information to define your risk.
2. **INFLAMMATORY BIOMARKERS:** The presence of cholesterol plaque under the lining of our arteries does not go unnoticed by the body. The material produces irritation that the body senses as a kind of infection and responds to by producing increased amounts of HIGH SENSITIVITY C REACTIVE PROTEIN or hsCRP, which can be detected in increased amounts in the blood. Recent work has recommended the use of cholesterol lowering drugs to treat high levels of HS CRP with resulting decreased risk of heart attack and stroke.
3. **STRESS TESTING:** Treadmill stress tests allow the cardiologist to observe your level of fitness, symptoms you may have noted during ordinary activity and records a continuous EKG as you walk. The accuracy of the test is improved by adding some type of imaging before and after the treadmill such as a sonogram (echo stress) or a nuclear scan. These tests are positive if you have a 50-70% narrowing of one of your coronary arteries. Accuracy is in the 80-85% range.

4. CAROTID INTIMA-MEDIA THICKNESS (CIMT): As noted, a positive stress test requires a relatively high degree of narrowing of your coronary artery to show up and gives a “snap shot” or real time view of how your arteries are functioning today. A negative stress test doesn’t mean that you have no plaque build up. CIMT looks at your future risk for heart attack or stroke based on how thick the lining of your neck arteries is compared to men and woman of your same age and sex. If your arteries appear to be thicker or “older” than your real age, this may foretell problems in the next 7-9 years, which can be prevented with aggressive cholesterol lowering.
5. ANKLE BRACHIAL INDEX (ABI), “PAD TEST” This is a simple and painlessly performed test, which addresses the issue of whether you have cholesterol build up in your leg arteries. Blood pressure cuffs are applied to the arms and legs and inflated sequentially. Ordinarily, because of the recoil properties of your leg arteries when they are healthy, the blood pressure in the ankle is substantially higher than in your arms. This is expressed as an Ankle Brachial Index or ratio. Values higher than 1.0 are normal, less than 1.0 suggest some clogging. In some patients, leg pains with walking can be explained by poor arterial circulation unmasked by this test. If an abnormal result is detected, the cardiologist will want to check your other arteries as well.

RECOMMENDATIONS:

1. See your internist annually to check your blood pressure, fasting cholesterol profile and blood chemistries that can predict future heart disease.
2. Consult with a cardiologist about the advisability of stress testing and other vascular screening tests to decide if you have any signs of premature atherosclerosis that merit treatment.
3. Stop worrying about approaching that birthday. Once you have been medically evaluated and cleared or treated, your risk for a near term heart attack will decline dramatically.