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Heart to Heart

With Philip S. Chua, M.D.

Cardiac Cath: “Supreme Court” of Heart Tests

What is a Cardiac Catheterization?

Cardiac Catheterization is a medical test where radio-opaque dye is injected into the left (and as needed, also into the right) chamber of the heart and the coronary arteries of the heart to find out if there are any abnormalities of the inner walls of the heart, the heart valves, the strength of the cardiac contraction (pumping action), and any blockages in heart arteries.

How is it performed?

The cardiologist injects an anesthetic agent (numbing medication) into an area of the skin in the groin of the patient, who has been given a sedative beforehand, and makes a 2 mm hole in the skin. Through this tiny opening, a catheter (size of a strand of spaghetti) is inserted into the femoral (groin) artery and under X-Ray fluoroscopic guidance, advances this catheter to the base of the ascending aorta (large major artery connected to the heart). The two main coronary arteries (left and right) branch out from the base of the aorta to supply blood (carrying oxygen and nutrition) to the muscles of the heart. Once the tip of the catheter catches or hugs the opening of the left and right coronary arteries, dye is injected into the catheter into these arteries, and video film of the dye flowing into the coronary arteries are taken. If there are any blockages, they will be captured on the (movie) film. Dye is also flushed into the left ventricle (in some cases, also into the right ventricle) to visualize any wall or valve abnormality and measure the Ejection Fraction (EF) (as a gauge of how powerful the left ventricle pumps blood into the circulation. A poor EF suggests weak cardiac muscles, which could be due to blockages of the coronary arteries (lack of blood supply), diseased heart valves or cardiomyopathy (usually a viral infection that causes weak and flabby heart muscles).

How painful is the test?

The patient feels a tiny needle stick when the anesthetic drug is injected into the skin in the groin. Thereafter, there is no pain, just a mild discomfort in the groin as the cardiologist manipulates the catheter. When the dye is injected into the coronary arteries in the actual testing procedure, the patient feels a very warm sensation in the chest and then face and head, then the abdomen. But the sensation clears out fast, in a few seconds, and not really that bothersome.

Why is this test important?

Cardiac Cath or Coronary Angio, as the procedure is popularly nicknamed, is what could be regarded as the “supreme court” of all heart tests. While EKG (electrocardiogram) and Stress EKG (treadmill test), or even ECHO (echocardiogram) are studies used to detect the presence of coronary artery disease, these tests are non-invasive procedures utilized as preliminary or screening diagnostic methods. If they show normal results, then chances are there are no blockages in the coronary arteries. If the results are doubtful or positive, then cardiac cath is performed to make the final determination. Following cardiac cath, the physician can say with practically 100% certainty if the patient has coronary blockages or heart valve disease or not. Hence, it is considered the “supreme court” or “court of final resort” of cardiac diagnostic tests.

What are the possible complications of this test?

Allergy to the dye injected is one possible complication. An antihistaminic and steroid injection could be given by injection (before the procedure) for those with known allergy to the dye, or is used to counteract this allergy following the test. During the actual catheterization, there could be temporary heart irritation from the catheter in the aorta or in the heart, causing minor heart beat irregularity or slowing of the heart rate. A tiny air bubble or tiny clot could travel to other organs or to the leg, but this is very rare and more of an exception. After the procedure, and the catheter is removed from the puncture site at the groin, there could be bleeding. Usually, the oozing is very mild, and pressure applied to the area stops the bleeding. Cardiac cath is a widely used procedure every day all over the world and a very safe test.

Is this procedure available in Cebu?

Yes, this test is available in Cebu, and performed by especially trained heart specialists called Interventional Cardiologists at the Cebu Cardiovascular Center of the Cebu Doctors’ Hospital, Perpetual Succour Hospital, and Chong Hua Hospital

Has there been any death reported from the procedure?

Just like many invasive medical tests, cardiac cath has attendant risk, but the risk of dying from cardiac cath is much much less compared to, say accidental death

from a car accident on a busy highway. The risk of NOT having the test at all and leaving the heart condition undiagnosed poses a greater risk than undergoing cardiac cath. In one study, it was shown that in 5000 consecutive cardiac cath, there was no mortality at all. Indeed, cardiac cath is one of the safest tests, and a most valuable and life-saving one.

Can heart surgery be done without cardiac cath?

For coronary bypass surgery, no. The heart surgeon needs the vital coronary arterial anatomic and physiologic information from the cardiac cath in making his decision and recommendation to the patient. This findings on the video film provides a dynamic “road map” for the cardiac surgeon during surgery. In cardiac valve diseases, ECHO alone, in most of the cases, would suffice, unless there is a suspicion that the coronary arteries may also have significant cholesterol blockages.

How vital is this test?

Prior to the introduction of cardiac cath in 1958, people developed coronary artery disease, undiagnosed, and died of heart attack without much hope. It was only after this test became popular that heart lung machine, heart bypass procedure came about, one rapidly following the other in historical development. And these three technologies prospered and exploded, hand in hand, to their present state-of-the-art popularity and service to humanity.

Can the test be done more than once?

Where medically needed, cardiac cath may be done as often as possible, even after a day or two. However, the procedure is usually done just once, unless there is an additional or new medical problem that arises, where a repeat cardiac cath may be indicated.

Should cardiac cath be done as preventive measure?

Not as a rule. If there are no symptoms, and the patient is healthy and active, we do not recommend cardiac cath just to satisfy our or the patient’s curiosity. Besides being expensive, the test has possible risk and complications (although mild and rare) as described earlier. One exception is for big corporation executive check-ups and for airline pilots, where some companies require initial employment cardiac cath. The other exception, which is more of a medically indication, is for persons who have a strong family history of heart attack (a genetic predisposition), who are also hypertensive, diabetic, and a cigarette smoker.

What is a “widow-maker” lesion?

The possibility of the presence of the “widow-maker” blockage is also a medically accepted reason for doing coronary angiogram as a preventive measure, even if the patient looks healthy and has no symptoms whatsoever. When the Stress Test (EKG taken on a person walking on a treadmill of increasing speed and incline) shows findings suspicious of a left main coronary artery (LMCA) blockage (widow-maker lesion), which could have a 50% mortality within 6 months depending on its severity, coronary angiogram is a mandatory medical recommendation, even if the patient is totally asymptomatic. Indeed, this LMCA lesion has caused sudden deaths and all too many widows. I have seen many patients with this preventable catastrophes and deaths. So, if in doubt, see your doctor, at least for a stress test, especially if you are 45 years and older. As we have said before, “Take good care of your heart; it’s the only one you’ve got.”

Please add usual footnotes