

Cardiac Imaging and its Techniques

Brown Lee*

Department of Cardiology, University of Arizona, Arizona, USA

DESCRIPTION

Cardiac imaging, which is also known as cardiovascular imaging, is a subfield of diagnostic radiology. Several cardiac imaging methods have become essential in modern cardiovascular medical practice, not only for diagnosis, but also for the treatment of various cardiovascular diseases and guidance of invasive procedures. Cardiac radiologists monitor or perform medical images and interpret them to diagnose heart conditions such as heart disease, heart valve leaks, and heart size or shape defects. Cardiac imaging shows the blood flow to the heart and around the heart.

Cardiac imaging includes various types of tests which take images of the heart, blood vessels, and surrounding anatomy. Health care providers use this test to diagnose and treat heart diseases. Examples of cardiac imaging studies include chest X-rays, cardiac MRIs, and cardiac nuclear stress studies. The main types of cardiac imaging are echocardiogram (echo), cardiac Computed Tomography (CT), cardiac nuclear stress test, Single Photon Emission Computed Tomography (SPECT), cardiac Positron Emission Tomography (PET), coronary angiography or left heart catheterization, cardiac MRI, Multigated Acquisition (MUGA) scans. Some of the cardiac imaging modalities can be combined, such as CT scan with coronary angiography or PET and CT scan. Healthcare providers may use cardiovascular imaging for many reasons, including screening for heart disease, detecting problems early, diagnosing heart disease, determining if a heart attack has occurred and the extent of the damage, and finding the cause of symptoms such as chest pain and shortness of breath, to monitor the heart to assess whether therapy is working. Cardiac imaging aids in the diagnosis and treatment of many heart diseases, including arrhythmia, coronary artery disease, myocardial infarction, and heart failure, pediatric and congenital heart diseases such as, structural abnormalities, valvular disease, and pericardial disease. The use of standard CT and MRI is limited because the heart is constantly beating, but faster CT and magnetic resonance techniques can provide useful cardiac images when the rhythm is regular and the heart rate is

controlled. Sometimes doctors may also give drugs to patients to slow the heart rate during imaging (such as beta-blockers).

In ECG gating, the image which is produced (or reconstruction) is synchronized with Electrocardiogram (ECG) to provide information from multiple cardiac cycles, this information can be used to create a single image of selected points in the cardiac cycle. CT gating uses the ECG to trigger the X-ray beam at a desired portion of the cardiac cycle, exposing the patient to less radiation than gating which simply reconstructs the information from only the desired portion of the cardiac cycle (gated reconstruction) without interrupting the X-ray beam. Non-invasive cardiac imaging refers to a combination of techniques that can be used to acquire images that are related to the structure and function of the heart. Unlike invasive procedures that require the insertion of a catheter into the heart, non-invasive tests are easy and safe to perform and can help in the detection of various heart diseases ranging from the plaque formation in the arteries that supply the heart muscle known as coronary artery disease, to abnormalities that affect the heart's ability to pump blood.

Some cardiac imaging tests can be used to analyse the risk in people without symptoms, but most of the tests are done to analyse the cause of symptoms that may be due to cardiovascular disease. It is important to know that for some people with narrowed coronary arteries commonly experience chest discomfort and shortness of breath during physical activity, but such symptoms can also be caused by other causes which are unrelated to heart disease. Standard MRI helps analysing the areas around the heart, especially the mediastinum and great vessels. Sequential MRI after injection of a paramagnetic contrast agent it produces higher resolution of myocardial perfusion patterns which does radionuclide imaging. Electron beam CT, earlier called as ultrafast CT or cine CT, unlike conventional CT, Multidetector CT (MDCT). Cardiovascular imaging is safer because the methods used are non-invasive or minimally invasive. Allergic reactions to the dyes used in some cardiac imaging tests are rare in people.

Correspondence to: Brown Lee, Department of Cardiology, University of Arizona, Arizona, USA, E-mail: Lee@gmail.com

Received: 04-Oct-2022; **Manuscript No.** AOA-22-20238; **Editor assigned:** 06-Oct-2022; **PreQC.** No. AOA-22-20238 (PQ); **Reviewed:** 20-Oct-2022; **QC.** No. AOA-22-20238; **Revised:** 27-Oct-2022; **Manuscript No.** AOA-22-20238 (R); **Published:** 03-Nov-2022, DOI: 10.35248/2329-9495.22.10.291.

Citation: Lee B (2022) Cardiac Imaging and its Techniques. Angiol Open Access. 10:291.

Copyright: © 2022 Lee B. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
