

Cardiovascular Ultrasound

This technique includes tests that use high frequency sound waves imperceptible to the human ear, whose interaction with the tissues provide reliable direct images of the structure and function of the heart and blood vessels. Cardiovascular ultrasound includes echocardiography and also the Doppler effect, which can assess blood flow through the heart chambers, valve function, and flow conditions in peripheral vessels, either at the level of the neck vessels or in the arteries and veins of the limbs or abdominal organs.

WHO CAN BENEFIT FROM IT?

The test is safe, since it does not involve radiation or iodinated contrast. It can therefore be performed on any patient at any age, even on pregnant women and their unborn babies, to diagnose possible prenatal congenital malformations. It can also be repeated safely for proper monitoring of different conditions and to assess treatment efficacy.

WHAT IS IT USED FOR?

It provides a direct visualization of the heart and vascular structures, showing their size, wall thickness and motility, the ventricular pumping performance, and the status of the native valves and valve prostheses, which can present opening limitations (stenosis) or improper closure (regurgitation). In this way, it allows differentiating normal from vascular or heart disease, providing data to determine its severity or to establish the criteria that help physicians indicate or modify treatments.

WHAT TYPES OF CARDIOVASCULAR ULTRASOUND TESTS ARE THERE?

Ecocardiograma Transtorácico: This diagnostic tool is widely spread and easily accessible. Several test modalities have been developed, the most common type being transthoracic Doppler echocardiography. A small device is placed on the chest wall, which is painless for the patient, and the machine shows the movement of the heart structures on the computer screen. Color echo-Doppler shows blood flow through the chambers, its direction, and if abnormal flows are detected, these can be quantified by measuring the velocity and characteristics of the graphic waves.

Stress echocardiography assesses the heart response to various demands, either during exercise or by the use of drugs (dobutamine, dipyridamole), detecting whether the flow in the coronary vessels that nourish the heart muscle is adequate or limited due to vascular obstructions affecting its capacity to contract properly during stress. The sensitivity of this test to identify coronary artery disease is equivalent to that of nuclear cardiology tests, and a negative stress echocardiography can reliably predict a good clinical outcome.

Eco Doppler Transesofágico: Miniaturized ultrasonic sensors have prompted their incorporation to the end of an endoscope which is guided into the esophagus under local anesthesia to explore structures that cannot be visualized properly from the chest wall (descending aorta, left atrial appendage). Due to its proximity to the heart, this technique has allowed perfect definition of valve structures as well as ruling out infections or small clots that can migrate to the peripheral circulation. Transesophageal echo-Doppler is especially useful for preoperative and intraoperative evaluation of heart valve abnormalities, for endovascular therapeutic procedures, and for critical patients, in whom visualization of the heart may be limited with transthoracic echocardiography.

Three-dimensional echocardiography, either transthoracic or transesophageal, facilitates interpretation of valve disorders and congenital heart defects, providing a more accurate overall vision, as well as views from angles inaccessible to tests with two-dimensional echocardiography, which can be reconstructed even after the test is over.

Eco Doppler Vascular allows the diagnosis of atherosclerosis of cerebral or peripheral vessels and the analysis of their extent and severity. In asymptomatic patients with intermediate cholesterol levels, the detection of small atheromas may suggest the benefits of drug therapy for dyslipidemia. It also allows to efficiently detect the presence of clots in the venous system (thrombosis), the mechanisms of venous insufficiency, and the state of the arterial circulation in the limbs.

SO SHOULD WE ALL HAVE AN ECHO-DOPPLER?

While this technique is noninvasive, and the results are accurate, only your physician can determine if the test is necessary to confirm the diagnosis of a clinical examination, to monitor a known condition, or to get information that may lead to treatment changes.

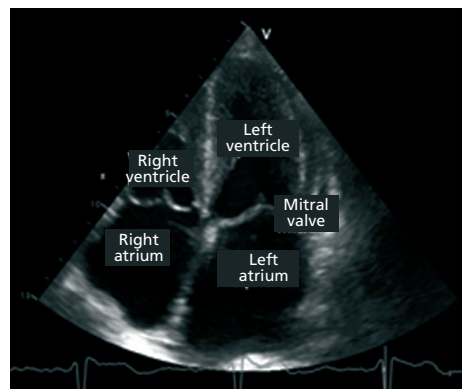


Fig. 1. Echocardiogram



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- ECOSAC VALVULOPATÍAS:
<http://www.sac.org.ar/web/es/consejos-cientificos/grandes-temas/-valvulopatias/>
- Recomendaciones del Comité de la ASE para la cuantificación de cavidades: http://www.ecosac.org/files/GUIA_002.pdf
- Asociación Española de Imagen Cardíaca: http://www.ecocardio.com/informacion_paciente/index.asp

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