

Pharmacological Stress Echocardiography

Introduction

Patients with heart disease may not have symptoms at rest. This applies in particular in those with coronary artery disease, in which there is narrowing of coronary artery but the supply of blood to heart muscle is maintained at rest. Exercise increases demand of blood supply to heart muscle which is not matched in the presence of arterial narrowing. Exercise is the usual form of stimulation used in stress test for assessment of the heart condition. Patients unable to exercise will require other form of stress for proper assessment. Electrocardiogram (ECG) is usually used to assess the heart condition. In those patients having ECG not suitable for assessment, echocardiogram is used as an alternative.

Importance of Procedure

- Pharmacological stress echocardiography (PSE) is a procedure that uses injection of pharmacological agents to stimulate the heart just like during exercise, so that echocardiographic images can be obtained for assessment of patient's cardiac status.
- Patients with or suspected to have coronary artery disease, may be assessed by pharmacological stress echocardiography. Significance of valvular lesions in patient with valvular heart disease can also be evaluated. It is also useful for pre-operative assessment of patients before non-cardiac surgery and determining long term prognosis in patients with cardiovascular disease.
- If you refuse the test, it may be difficult for your doctor to help you by making the correct diagnosis or accurately assessing your condition or prognosis. Alternative methods include other forms of stress tests (such as exercise stress echocardiography, radionuclide test or magnetic resonance), cardiac catheterization, or CT coronary angiogram.

Pre-Procedure Preparation

- It is an outpatient or day admission procedure.
- Preferably you should be accompanied by relatives or friends.
- Our staff will explain to you and your relatives the details of the procedure together with the possible risks and complications. You have to sign an informed consent.
- Light meal can be taken, but preferably at least 2 hours before the test.
- Some medicine and food items need to be stopped, as advised by your doctor.
- We will check your allergy history.
- An intravenous drip will be set up.
- Skin electrodes for cardiac monitoring will be applied by the nurse.

The Procedure

- You will be asked to lie on left lateral position.
- Pharmacological agents will be used to stimulate the heart just like during exercise to the heart rate as determined by the doctor according to your condition.
- The most common drug used is dobutamine and it will be given intravenously with the dosage adjusted according to your body weight.
- Other possible drugs will be used include atropine, betaloc and sonovue.
- Echocardiographic images will be obtained at different infusion rates and will be interpreted by the doctor.
- Attending medical staff will continuously monitor your symptoms, electrocardiogram, blood pressure and heart rate to minimize the risk of the test.
- The drug infusion will be stopped once the image acquisition is finished or when you develop symptoms.
- The examination room will be equipped for necessary equipment for emergency resuscitation.

Post-Procedure Care

- You may develop transient symptoms like chest discomfort, shortness of breath, palpitation, dizziness, hypotension during and after the examination and you will be asked to take rest for thirty minutes before leaving the hospital.
- If your symptoms persist or if the doctor feels it is necessary, you may be admitted to the medical ward for further management.
- You will be explained the result of the test during follow up. Please ask your close relatives to join in the discussion.

Risks and Complications

- The procedure carries certain risks.
- Major complications including significant cardiac arrhythmia, myocardial infarction or cardiac arrest is less than 0.1%.
- Minor complications include: allergy to drugs, nausea, shortness of breath, palpitation, dizziness or hypotension.

Remarks

- It is hard to mention all the possible consequences if this procedure is refused.
- The list of complications is not exhaustive and other unforeseen complications may occasionally occur. The risk quoted is for general reference only.
- If a complication developed, another life-saving procedure or treatment may be required immediately.
- If there are further concerns about this procedure, please feel free to contact our medical staff.

Reference

1. ACC/AHA Guideline Update for the Clinical Application of Echocardiography 2003.