

SPECT-MPI

A non-invasive method to detect coronary artery lesion

TAREQ SALAHUDDIN

SPECT stands for "Single Photon Emission Computed Tomography". Gamma ray emissions are the source of information here, rather than X-ray transmissions as used in conventional computed tomography.

Stress SPECT Myocardial Perfusion Imaging (SPECT-MPI) can be considered as a useful and sensitive non-invasive method to detect the severity of coronary artery lesion. The procedure is better known as cardiac scan. SPECT-MPI is most popular in the United States among other diagnostic methods available like treadmill exercise test, stress echocardiography, left heart catheterization with left ventriculogram and coronary angiography etc.

Indication of the test

- High clinical suspicion with negative exercise test.
- Low clinical suspicion with positive exercise test.
- Borderline or uninterpretable exercise test.
- Resting ECG precludes stress ECG test
- Culprit vessel identification in multi-vessel disease.
- Assessment of post Coronary Artery Bypass Graft (CABG) or PTCA.
- Identifying hibernating myocardium (aids decision making when considering revascularisation)
- Work up for cardiac transplan-



Dr S M Mustafa Zaman presented the research paper in the "Singapore Live 2006" conference.

ation (to help exclude coronary revascularisation as an option)

- Risk stratification prior to major non-cardiac surgery (e.g. vascular surgery)

Benefit of the procedure

It is a non-invasive procedure to find out the problem caused by coronary artery diseases and others. Moreover, as all people do not need coronary angiogram. It is cheaper than the coronary angiogram.

The facility is available in the country

Many people seeking medical treatment for cardiac care in abroad undergo through cardiac scan. They feel comfortable with

the procedure, as it is non-invasive and almost equally effective like coronary angiogram. Some of them go repeatedly to perform the test and most of them do not know that it is done in the country.

SPECT-MPI is done in Bangabandhu Sheikh Mujib Medical University (BSMMU) with the help of Institute of Nuclear Medicine.

A prospective study at BSMMU

In this connection, a prospective study observational study was carried out in the department of Cardiology and Institute of Nuclear Medicine of

Bangabandhu Sheikh Mujib Medical University (BSMMU) during two years.

The purpose of the study was to find out the correlation between severity of coronary artery stenosis (condition where a passage becomes narrow) and myocardial perfusion defect as assessed by SPECT.

Significant correlation was observed between perfusion defect and coronary artery lesions. Severe perfusion defect in SPECT scan found positive correlation with severe coronary artery lesion with higher correlation coefficient. Mild perfusion defect in SPECT scan found positive correlation with moderate coronary artery lesion with higher correlation coefficient. Regarding moderate perfusion defect by SPECT scan found positive correlation with severe coronary artery lesion with lower correlation coefficient.

The study found SPECT-MPI as a useful and sensitive non-invasive method of detecting severity of coronary artery lesion.

Dr S M Mustafa Zaman, Assistant Professor of Department of Cardiology of BSMMU carried out the scientific study in his department during two years. The research paper was submitted for "Singapore Live 2006" conference and was accepted to present there. It was the only research work to present in the conference from Bangladesh.

Health Tips

Simple measures to prevent pulmonary embolism

DR MD HABIBE MILLAT

A lung embolus (pulmonary embolism) is a condition that occurs when a blood vessel supplying the lung becomes blocked up. In most cases, the blockage is caused by one or more blood clots that travel to lungs from another part of your body. Most of these blood clots originate in the legs, but they can also form in the arm veins, the right side of the heart or even at the tip of a catheter placed in a vein.

In most cases, a pulmonary embolism is not fatal. However, pulmonary embolism is a leading cause of hospital deaths and an increasing threat to passengers on long airplane flights. But a few simple measures can go a long way toward preventing pulmonary embolism.

The symptoms of pulmonary embolism can vary greatly, depending on how much of lung is involved, the size of the clot and overall health condition especially the presence or absence of underlying lung or heart disease.

Common signs and symptoms includes sudden shortness of breath, chest pain that often mimics a heart attack, a cough that produces bloody or blood-streaked sputum, excessive sweating, rapid heartbeat, fainting.

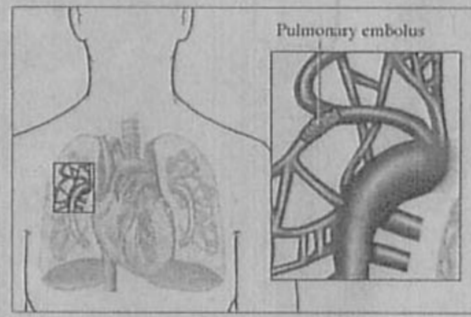
Other signs and symptoms that can occur with pulmonary embolism include wheezing (whistling noise in the bronchi), clammy or bluish-coloured skin, leg swelling, and weak pulse.

Anyone can develop blood clots and subsequent pulmonary embolism. The following factors increase risk like inactivity – prolonged bed rest, certain surgical procedures such as major lower abdominal operation, some medical conditions such as cancer, being overweight, pacemakers or venous catheters, pregnancy and childbirth, birth control pills, family history, smoking.

Once diagnosed, you will be treated with medicine that 'thins' the blood (anticoagulants such as heparin and warfarin). This treatment reduces the risk of getting a new embolus. This treatment can last for several months or even for the rest of your life, depending on the risk.

Pulmonary embolism can be prevented with a few simple measures i.e. physical activity, support stockings, drinking plenty of water.

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Pacemaker in the treatment of heart diseases

DR ABDULLAH AL JAMIL

We have only one heart but it has the risk of suffering hundreds of diseases. There are different ways of treatment for each of these diseases. The educated people have some knowledge about different heart diseases and their treatments, like valvular heart diseases, coronary artery diseases, congenital heart diseases, myocardial diseases, etc. But we have very little knowledge about the disorders of the rhythm of the heart.

Our heart has specialised tissue known as "Conductive (or electrical) system of the heart" which is responsible for the generation of electrical impulse, its propagation and maintenance of heart rhythm. This system includes sinoatrial (SA) node, atrioventricular (AV) node, bundle of His, right and left bundle branches and Purkinje fibers. Electrical impulse is generated from the SA node, known as natural pacemaker of the heart, at a rate of 60 to 100 beats per minutes. From there the impulse propagates to AV node, then through bundle of His it goes to

Purkinje and finally excite the ventricular muscle to contract.

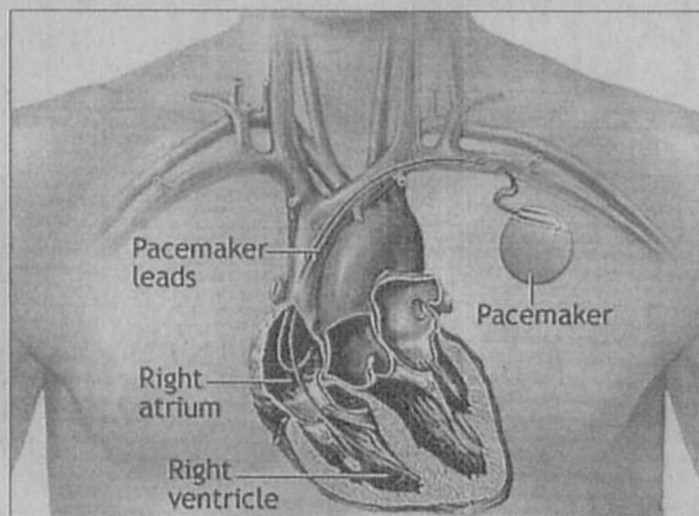
The disease of rhythm are collectively called arrhythmias or dysrhythmias. Diseases of the conductive system involving the SA node, AV node, bundle of His and both its branches give rise to abnormal heart rhythm. Arrhythmias can primarily be divided into two broad groups:

1. Bradycardia: Disorders with slow heart rhythm
2. Tachycardia: Disorders with fast heart rhythm

There are many conditions which cause bradycardias. Among them, complete heart block (failure of electrical impulse propagation from SA node to bundle of His via AV node) and SA nodal dysfunction (including sick sinus syndrome) are the commonest and most important causes of bradycardia those cause symptoms.

All types of bradycardias cause almost similar pattern of symptoms such as vertigo, dizziness, feeling of imbalance and fall down (presyncope), sudden unconsciousness (syncope) etc. These symptoms usually occur

during exertion. During the episode of presyncope or syncope there are pallor of the face, hands and feet, sweating, coldness of the skin, slow pulse rate and fall of blood pressure.



Bradyarrhythmias are diagnosed by symptoms and signs as mentioned above and by laboratory investigations. Among them, electrocardiography (ECG) and Holter monitoring are

most important. In addition, chest X-ray and echocardiography are done to detect associated cardiac diseases. Those patients who develop symptoms during exer-

These are detected during routine medical check-up. If the patient does not have any symptoms and is diagnosed incidentally, he or she usually does not require any treatment but one must be alert. The person must consult a cardiologist immediately if he or she develops any symptom. Any type of bradyarrhythmia that causes presyncope or syncope generally requires permanent pacemaker implantation.

A pacemaker is a small electronic device that contains a battery and electronic circuits. It is implanted by a minor surgery under local anesthesia in the upper part of the front of the chest below the collar bone beneath the skin either on either side. If a patient is a right handed person, then it is preferable to put the pacemaker on the left side and vice-versa.

There are several types of pacemakers. Following are commonly used pacemaker types:

1. Single chamber
2. Dual chamber

The pacemaker is connected to the heart chamber(s) by special wires known as lead system. Depending on the type of pacemaker, one or two leads are needed. The type of pacemaker is chosen according to the type of bradyarrhythmia.

After implantation of the pacemaker the patients have to follow the following instructions:

1. The arm on the side where the pacemaker was implanted should not be raised above the head for one month.
2. Should not lift or carry heavy weight by the arm of that side for six months.
3. Should avoid using mobile phone on that side.
4. Should not go close to television or microwave oven.
5. The patient can not undergo MRI examination.
6. One should always tell his or her physician that he or she has pacemaker implanted.

One should come for regular follow-up one month, three months and six months after discharged initially and then continue yearly monitoring of the pacemaker.

The writer is an Assistant Professor of Cardiology at Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbag, Dhaka.

Sleep Disorders

Not enough sleep associated with weight gain

REUTERS, New York

Women who fail to get enough shut-eye each night risk gaining weight, a Cleveland-based researcher reported at a medical conference in San Diego recently.

In a long-term study of middle-aged women, those who slept 5 hours or less each night were 32 percent more likely to gain a significant amount of weight (adding 33 pounds or more) and 15 percent more likely to become obese during 16 years of follow-up than women who slept 7 hours each night.

This level of weight gain – 15 kg, or 33 pounds – is "very clinically significant in terms of risk of diabetes and heart disease," Dr Sanjay Patel of Case Western Reserve University told.

Women who slept 6 hours nightly were 12 percent more likely to experience major weight gain and 6 percent more likely to become obese compared with those who slept 7 hours each night.

The 68,183 women in the study provided information in 1986 on their typical night's sleep and reported their weight every 2 years for 16 years. The findings were presented at the American Thoracic Society's International Conference.

Women who said they slept for 5 hours or less each night, on average, weighed 5.4 pounds more at the beginning of the study than those sleeping 7 hours.

After accounting for the

influence of age and weight at the beginning of the study, women who slept 5 hours or less each night gained about 2.3 pounds more during follow-up than those who slept 7 hours nightly. Women who got 6 hours of shut-eye each night gained 1.5 pounds more than those who slept 7 hours nightly.

The researchers analysed the diets and physical activity levels of the women, but failed to find any differences that could explain why women who slept less weighed more. "We actually found that women who slept less, ate less," Patel said.

"In terms of exercise, we saw a small difference in that women who slept less exercised slightly less than women who slept more but it didn't explain the magnitude of our findings," Patel said.

All in all, it seems that diet and exercise are not accounting for the weight gain in women who sleep less, Patel concluded.

It is possible that sleeping less may affect changes in a person's basal metabolic rate – the number of calories burned when at rest, Patel said.

Another possible contributor to weight regulation that's come to light recently is called "non-exercise associated thermogenesis" or NEAT, which refers to involuntary activity such as fidgeting or standing instead of sitting. It may be, Patel said, that if people who sleep less, also move around or "fidget" less.



Artery disease seen with sleep-breathing disorder

Otherwise healthy middle-aged people with obstructive sleep apnea – a disorder in which they frequently stop breathing for brief periods while they sleep – show early signs of hardening of their arteries, according to a report from Brazil.

"Our findings support the hypothesis of a direct link between obstructive sleep apnea and cardiovascular diseases," Dr Luciano F Drager told. Drager and his team at the University of Sao Paulo measured indicators of early atherosclerosis in 30 patients with untreated obstructive sleep apnea and in 12 matched healthy volunteers. None of the participants had previous evidence of cardiovascular disease.

The measurements of early atherosclerosis tended to show a direct correlation with the severity of sleep apnea. A parameter reflecting artery stiffness was significantly higher among patients with severe sleep apnea than among patients with milder apnea and among the healthy comparison group, the report indicates. The same was found

for the thickness of the artery walls.

"The novel finding in the present study is that middle-aged patients with severe obstructive sleep apnea, without overt cardiovascular diseases, demonstrate early signs of atherosclerosis," the researchers conclude.

"We are currently performing a randomised study with CPAP (continuous positive airway pressure) to evaluate the impact on these signs of atherosclerosis," Drager said.

CPAP delivers pressurised air via a facemask to patients while they sleep, to prevent their airways becoming blocked. It is usually used to relieve the sleep interruptions that lead to dangerous sleepiness during the day.

"This study should add important evidences to justify the (greater) use of CPAP in patients with obstructive sleep apnea, even in the absence of prominent sleepiness-related daytime symptoms," Drager noted.

Source: American Journal of Respiratory and Critical Care Medicine

Health News

Hospital management software installed at USTC

Bangladesh Internet Press Limited (BIPL) an ISO 9001:2000 certified software company developed and installed an Integrated Hospital Management System in Bangabandhu Memorial Hospital, USTC – says a press release.



Bangabandhu Memorial Hospital, a 300 bed Hospital in Chittagong founded by National Professor Dr Nurul Islam, has successfully launched BIPL Hospital Management System, a high-end Hospital Management System, for the benefit of faster and smoother services to their patients.

Trumps to bid drugs bye

DR SATPARKASH

Addiction is a biological disease. Alcohol dependence and addiction to drugs such as Methamphetamine (Yaba and Ice) or opiates including heroin, smack or brown sugar, opium, cough syrups, Proxyvon, Spasmoproxyvon, Fortwin, Morphine and Tidigestic injections are dreaded problems all over the world today.

The addict dreads going in for detoxification or getting the body clean of drugs because of the intense discomfort experienced during withdrawal. Withdrawal is the period of time when somebody is getting used to not taking a drug that they have become dependent on,

and the unpleasant effects of doing this. With rapid detoxification, the entire procedure is painless and no discomfort is felt during withdrawal. This is achieved through latest scientific and cutting edge international technologies.

Unfortunately, will-power and determination are not the pillars of prevention from relapse. Here relapse refers to the fact of becoming addict again after making an improvement. Earlier, the failure rate of treatment was about 95 percent. That is, a relapse was almost inevitable. But not now!

In a radical improvement in the treatment strategy, medicinal implants are now put under the skin through minor surgery. The

implant makes relapse almost impossible. An implant can last for a period of three months up to one year. It avoids the need to supervise administration of the tablet and the arguments that follow, makes it impossible to 'forget' to take the tablet and eliminates craving because there is no point in craving for something that you cannot have. Using implants, the success rates as high as 95 percent to 98 percent with different kinds of drugs.

For the people addicted to sleeping pills, through a slow infusion of antidotes carried out under medical supervision over a few hours, these drugs are flushed from the body and when the body is clean, relapse

prevention methods are initiated.

Various strategies to help people decrease or quit the smoking habit are also available. These include nicotine replacement therapy and acupuncture.

In addition to all these latest strategies, facilities are also available for long-term hospitalisation and rehabilitation, management of all psychiatric disorders, various psychological and psychiatric diagnostic tests and different kinds of psychotherapy.

Different drug testing kits that give instant results can diagnose abuse of drugs such as opiates, stimulants.

The writer is an Addiction Disorders and Rehabilitation Programme specialist.

Your Doctor

On coming issue "Your Doctor" will respond to problems of fertility and reproduction. Send your questions to Your Doctor, Star Health, The Daily Star, 19, Karwan Bazar, Dhaka 1215 or e-mail your problem to starhealth@thedailystar.net