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Welcome to the second edition of "The Murmur". Dr Sam Hillier has commenced at HeartRx and has launched the stress echocardiogram service including contrast echocardiograms with Far North QLD's first contrast stress echocardiogram being performed last week. It really is exciting to see important new services such as this commence. Appointments are readily available for Dr Hillier and patients can be seen by him within a week of the referral. With Dr Hillier's arrival we have the capacity and capability at HeartRx to expand the various echo services significantly.



The specialised services of the Paediatric Cardiologist, Dr Ben Reeves are excellent to have in house. Ben has added an invaluable service, consulting weekly at HeartRx, and appointments are also readily available with him.

DIRECT REFERRAL EXERCISE STRESS ECHOCARDIOGRAPHY

PRACTISING

Clinical Cardiology

Transoesophageal Echocardiography

Echocardiography

Stress Echocardiography

Stress Testing

Holter Monitoring

Event Monitoring

Ambulatory BP Monitoring

Pacemaker and Defibrillator Follow-up



HeartRx has commenced a direct referral exercise stress echocardiography (stress echo) service, for patients for investigation of chest pain, exertional dyspnoea, or in patients with intermediate or high global CAD risk. After consultation with a Cardiologist, stress echo can also be used to evaluate patients with asymptomatic severe mitral and aortic regurgitation without indications for surgery, symptomatic patients with apparently only moderate mitral stenosis or mitral regurgitation on a resting transthoracic echo (TTE), and in patients with hypertrophic cardiomyopathy.

The procedure for a stress echo involves a limited echocardiogram, to obtain resting LV size, systolic and diastolic function, with a limited valve assessment (to exclude contraindications to an exercise treadmill). Immediately following exercise on a standard Bruce Protocol, further echo pictures are obtained, and compared to rest images. The Cardiologist will be present for the exercise and post echo images, with a brief explanation of the results given to the patient, before a further set of (recovery) images are taken. Depending on the results, a consultation can be arranged to discuss the implications and further management if desired.

A stress echo offers the advantage over a Myocardial Perfusion Scan (MPS) of no radiation exposure, with the average MPS exposing the patient to 10 – 20 mSv of radiation (on average, equivalent to 500 chest x-rays). Stress Echo also has higher specificity. One of the disadvantages of MPS has been the failure to recognise the most prognostically important anatomical distribution of coronary artery disease – three vessel or left main disease! There is a lot of scientific literature confirming this, but for example, in one recent study directly comparing patients with known LM/TVD, stress echo performed favourably, with MPS missing 1:4 compared to Stress Echo missing only 1:17 (Heart (2010);96:956-66). Stress echo results are also available immediately to the patient, and the cost and time involved are lower. For a stress echo, patients will need to be able to walk on a treadmill to undergo the test. Dobutamine Stress Echo (DSE) can be utilised to assess patients who are completely unable to manage on a treadmill, but DSE is usually a hospital based procedure and is therefore currently not available at our private rooms. HeartRx has been having discussions with the hospitals regarding introducing this service.

Dr Sam Hillier



Direct access stress testing

Direct stress test clinics are held at HeartRx

Out of pocket patient costs are \$90.

Antibiotic Prophylaxis for dental and other procedures for cardiac children

PAGE 2

The recommendations for antibiotic prophylaxis is often a confusing topic for parents, dentists and general practitioners. The guidelines have changed since an American Heart Association release in 2007, later adopted worldwide, which identified a much smaller group of congenital heart defects which are recommended to have prophylaxis. A good synopsis of the current recommendations can be found here: http://www.aapd.org/media/Policies_Guidelines/G_AntibioticProphylaxis.pdf

In summary, almost all children (and adults) with congenital (and some acquired valvular) disorders are considered at increased risk of endocarditis. The vast majority of cases of infective endocarditis caused by oral flora results from transient bacteraemia due to routine daily activities such as tooth-brushing, flossing and even chewing. In the past antibiotics had been commonly recommended for certain dental procedures. Antibiotic use is known to contribute to the development of resistant organisms and has their own risk of side effects including anaphylaxis. In developing its updated guidelines the American Heart Association noted that "infective endocarditis is much more likely to result from frequent exposure to random bacteraemias associated with daily activities than from bacteraemia caused by a procedure". In such procedures, antibiotic prophylaxis is likely to prevent an "exceedingly small number of cases of endocarditis and that the risk of adverse antibiotic events exceeds the benefit". Maintenance of optimal oral hygiene is more important than antibiotic prophylaxis to reduce the risk of endocarditis. Prophylaxis should therefore be reserved for those cardiac conditions with the highest risk of endocarditis.

Current reasons to consider antibiotic prophylaxis include:

- Prosthetic valves or other prosthetic material used for valve repair
- Previous infective endocarditis
- Unrepaired cyanotic heart disease
- Repaired congenital heart disease with prosthetic material during the first 6 months after the procedure
- Repaired congenital heart disease with residual defects at the site or adjacent to the site of a prosthetic patch or device
- Cardiac transplant patients who develop cardiac valvulopathy

In addition to these American recommendations, I would add another more specific to North Queensland:

- Rheumatic Heart Disease with known valvular pathology (not just patients with previous acute rheumatic fever)

The recommended regimen has not changed significantly and remains amoxicillin 1g (50mg/kg for children). Alternatives for patients unable to tolerate oral medication include IM Ceftriaxone, or for Penicillin allergies Clindamycin. Antibiotics are given as a single dose 30-60min prior to the procedure. One note with prophylaxis for rheumatic patients, is because they are frequently on long term Penicillin prophylaxis they should be offered a different antibiotic, such as Clindamycin.



Dr Ben Reeves

Intravascular Ultrasound

We are pleased to announce an imminent addition to the Cairns Private Hospital Cardiac Catheterisation Lab. Intravascular ultrasound (IVUS) is an essential imaging tool for modern Interventional Cardiologists. It is performed using a miniaturised ultrasound probe attached to the distal end of a specially designed catheter. This can be advanced within coronary arteries over standard guide wires to generate exquisitely detailed images of the internal structure of vessels. The IVUS catheter is attached to an external console which captures and stores the data and facilitates interrogation of the images obtained.

IVUS use to determine the severity of stable coronary artery stenoses has declined somewhat with the widespread adoption of fractional flow reserve (FFR) as a first line modality to assess borderline angiographic lesions. IVUS is still widely used to image left main coronary artery disease however. Its major current use is pre and post percutaneous coronary intervention (PCI). IVUS allows accurate stent sizing, assessment of stent expansion and vessel wall apposition, and exclusion of PCI related complications, such as stent edge dissection. Its use has been associated with improved clinical outcomes post PCI. Other applications include the assessment of plaque morphology and composition which can help identify culprit acute lesions if the angiographic appearances are not conclusive. Active research is ongoing in the identification of 'vulnerable plaque' which may allow pre-emptive treatment to avert acute coronary syndromes.

Ongoing modernisation of the Cardiac Catheterisation Lab is vital as the equipment and tools available evolve rapidly in an ever changing field. Access to IVUS is one part of the armoury to ensure all of our patients requiring coronary angiography and/or percutaneous interventions are achieving the best outcomes possible.

Dr Shane Preston

