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ATRIAL FIBRILLATION

UPDATES ON THE LATEST GUIDELINES FOR THE MANAGEMENT OF ATRIAL FIBRILLATION

Atrial Fibrillation (AF) is the commonest heart rhythm disorder which affects millions of people around the world. Its prevalence increases with age- it is very unusual in people below the age of 30 but affects as many as 1 in 20 (i.e. 5%) of people over the age of 65. It is estimated that as many as 50,000 people in Singapore have AF with the number worldwide set to double by the year 2050. Thus it is important that clinicians are able to detect AF early to avoid co-morbidities and give patients the best treatments available.

The management of AF is necessarily complex due to the nature of the condition, variety of tests available for detection and risk stratification, different treatment options available and increasing choice of anticoagulation. It is difficult for the busy general physician to keep up to date with the many large, randomized studies published over the past several years which have investigated the different aspects of AF management. Consequently, recent American and European international guidelines have been developed which make recommendations on best practices for the management of these complex arrhythmias [J Am Coll Cardiol. 2014; 64(21):e1-e76; European Heart Journal (2012) 33, 2719–2747].

The key points of these latest guidelines can be summarized as follows:

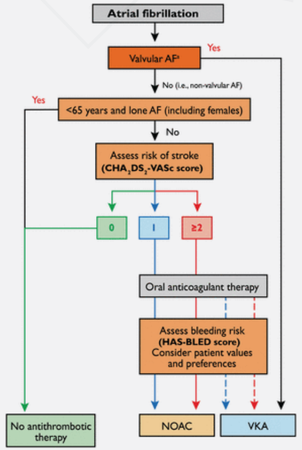
1. **Anti-coagulation:**
   - The selection of long-term antithrombotic therapy should be guided by the patient's risk for thromboembolism rather than the type or duration of AF- thus patients with paroxysmal AF are considered as high risk of a stroke compared with those with persistent AF.
   - Aspirin is no longer recommended for the prevention of thromboembolism in AF as it is ineffective. For patients with non-valvular AF and a CHA_2DS_2-VASc score of $\geq$ 2, a novel oral anticoagulant (NOAC, e.g. dabigatran, rivaroxaban, apixaban) or warfarin is recommended. Those with a score of 0 do not require anti-coagulation, whereas those with a score of 1 may be offered anticoagulation.
   - Patients with renal dysfunction will require a dose adjustment if given a NOAC; those with end stage chronic kidney disease (Creatinine clearance < 15ml/min) should be given warfarin instead.

2. **Maintenance of sinus rhythm:**
   - This can be achieved with anti-arrhythmic medication or catheter ablation.
   - The recommended anti-arrhythmics that can be used include flecainide, propanefanone, sotalol, dronedarone (not for chronic AF patients) and amiodarone. The choice of drug will depend on patients' heart condition and co-morbidities; amiodarone should be used as a last resort in view of its multiple toxicities.

3. **Catheter ablation of AF:**
   - Catheter ablation is recommended in patients with symptomatic paroxysmal AF who do not respond to or cannot tolerate $\geq$1 class I or III antiarrhythmic drugs.
   - AF catheter ablation to restore sinus rhythm should not be performed solely to avoid the need for anticoagulation.

What's new about the latest guidelines on AF?

There has been a shift from using the old CHADS2 score to the newer CHA_2DS_2-VASc score for risk stratifying patients at higher risk of thromboembolism- the newer system takes into account female gender and a younger age of patients which are not reflected in the CHADS2 system. NOACs are now placed on at an equal footing with warfarin and have the added benefits of fewer drug-drug interactions and lower risk of intracranial risk. Aspirin is no longer recommended for the lower risk patients. Finally, the recommendation for AF ablation is more prominently made in the latest guidelines in suitably selected candidates.



In summary, the management of patients with AF is complex as many factors needing to be considered. The important role of the primary care physician is to identify those at higher risk of AF and to try to detect the arrhythmia (through examination of the pulse and ECG if available). Treatment strategies and choice of anticoagulation can be made in conjunction with the specialist – both inputs are required for the contemporary and optimal management of the AF patient.

Figure- Flow diagram from the 2012 European Society of Cardiology focused update guideline on AF. Initial focus on identification of 'truly low risk', i.e. age <65 and lone atrial fibrillation (irrespective of gender) or CHA_2DS_2-VASc score = 0. Female patients who are aged <65 and have lone AF (but still have a CHA_2DS_2-VASc = 1 by virtue of their gender) are at low risk and no antithrombotic therapy should be considered.

By **Dr. Reginald Liew**
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The Harley Street Heart & Cancer Centre

LUNG CANCER

TO SCREEN OR NOT TO SCREEN

Cancer screening has been adopted as a standard approach for certain cancers and yet remains controversial for few other cancer types. Breast cancer screening with mammography, colon cancer screening with colonoscopy and cervical cancer screening with PAP smears had been shown to improve outcomes and survival.

Lung cancer, however, is the biggest killer amongst the cancers although its incidence lags behind breast and colon cancer. It is often diagnosed when it is at advanced stage due to the lack of symptoms earlier in the disease process. Lung screening trials had been conducted and the most significant one reported in the recent years was the National Lung Screening Trial (NLST) which was also the largest study.

This was conducted in the US where low-dose helical CT scan was compared to chest X-ray in the detection of lung cancers. The study enrolled more than 50,000 current or former heavy smokers ages 55 to 74. Subjects had to have a smoking history of at least 30 pack-years and were either current or former smokers without signs, symptoms, or history of lung cancer. Pack-years are calculated by multiplying packs of cigarettes smoked per day by the number of years a person smoked. Participants were randomly assigned to receive three annual screens with either low-dose helical CT or standard chest X-ray.

After a period of 7 years follow up, the study found that subjects screened with low-dose CT scans had 20% lower risk of dying from lung cancer compared to subjects screened with standard chest X-rays. This is equivalent to approximately three fewer deaths per 1,000 people screened in the CT group compared to the chest X-ray group (17.6 per 1,000 versus 20.7 per 1,000, respectively).

In the three rounds of screening exams, 24.2 percent of the low-dose helical CT screens were positive and 6.9 percent of the chest X-rays were positive. In most instances, the positive screens led to additional tests. Most of the lung cancers detected were adenocarcinomas and squamous cell carcinomas. Small-cell lung cancers tend to be very aggressive and patients become symptomatic earlier which explains why few were detected at symptom-free stage.

Therefore, should lung cancer screening be considered routine for all smokers? What about non-smokers or passive smokers? Although the NLST remains the largest randomized trial to demonstrate the benefits of screening, there are certain issues that need to be addressed in the near future. Do we stop the scans after 3 years? What about smokers who smoked less? Do the risk of screening outweigh the benefit? It has to be recognized that 90% of all the cases referred for biopsy in the study eventually showed benign disease, meaning a majority may have to undergo extra procedures unnecessarily.

Until then, the best advice now is to consider each person's additional risks individually before sending them for a scan, including the co-morbidities, presence of environmental pollution, a patient's occupational risks and whether that person is suited for any intervention should a cancer be found.

By **Dr. Ooi Wei Seong**
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STABLE ANGINA

UPDATES ON THE LATEST GUIDELINES FOR THE MANAGEMENT OF STABLE ANGINA

Reference Eur Heart J 2013; 34:2949

The 2013 ESC guidelines support the following
- Establishing the diagnosis, based on the pre-test probability of the disease and the results of non-invasive tests
- Assessing the risk of future cardiovascular events
- Implementing optimal medical therapy
- Determining the need for invasive coronary angiography and revascularisation
- Enrolment in a formal cardiac rehabilitation exercise program

Stable coronary artery disease (SCAD) is a highly prevalent condition and overall mortality varies from 1.2% - 2.4% per year. The aim of the management of stable coronary artery disease (SCAD) is to reduce symptoms and improve prognosis and encompasses lifestyle modification, control of risk factors, evidence-based pharmacological therapy and patient education. Revascularisation also has a role to relieve symptoms and/or improve prognosis.

Chest pain is a very common reason for referral to the specialist clinic and the determination that the symptoms indicate SCAD is the first challenge. An episode of angina lasts for a few minutes. It is generally triggered by exertion of emotional stress, and relieved by rest. The use of nitroglycerin (usually sublingual), relieves angina within approximately 1 min. Physical examination is usually normal in patients with stable angina. The occurrence of atherosclerosis in other regions, including decreased pulse in lower limbs, arterial hardening, and abdominal aneurysm, increase the likelihood of stable angina. Verification can be achieved from non-invasive testing coupled with the selective use of imaging.

Exercise treadmill test
The most predictive variables in the diagnosis of coronary obstruction are ST-segment depression $\geq$ 1 mm (measured at 0.80 seconds from the J-point), with a horizontal or descending pattern, and presence of chest pains.

Stress Echocardiography (exercise, dobutamine)
The test is used in diagnosis and prognosis, to assess the impact of revascularization therapies and myocardial viability, and to support therapeutic decisions. The test has good accuracy for induced myocardial ischemia in patients with intermediate or high pretest probability, with higher diagnostic sensitivity and specificity as compared with the exercise treadmill test.

All patients with stable angina should receive optimised medical therapy and undergo a prognostic risk assessment. Intensification of treatment, including revascularisation should be targeted to ischaemic burden, symptoms and risk of an untoward cardiac event. The pharmaceutical options are summarised in Figure 1. The ESC guidelines also recommend (Class II a) carotid Doppler and ankle-brachial pressure index measurements to screen for disease in other arterial beds in asymptomatic patients and also coronary calcium scoring to further risk stratify intermediate risk patients.

Escalation to invasive coronary angiography has been moderated since randomized controlled trials, such as the Optimal Medical Therapy with or without PCI for stable coronary disease (COURAGE) study demonstrated no differences in cumulative rates (median follow up 4.6 years) of clinical events or measurable improvement in quality of life in patients treated with medical therapy plus PCI versus those manged with medical therapy alone. However, there remains an important role for coronary revascularisation when the patient continues to suffer symptoms despite medical therapy, unable to tolerate medication or to improve prognosis when non-invasive assessment indicates a high risk of future clinical events e.g. >10% myocardium inducible ischaemia on stress imaging. Fractional flow reserve (FFR) (Figure 2) is advocated to determine the need for intervention in patients with intermediate severity stenosis and with normal functional tests. This recommendation is based on the Fractional Flow reserve-guided PCI versus medical therapy in stable coronary artery disease (FAME-2) trial which was stopped early due to favourable risk reduction in mortality, myocardial infarction and urgent revascularisation, in patients in undergoing intervention in vessels with lesions with an FFR<0.80. The approach to revascularisation – intervention or surgery - is dictated by clinical (e.g. diabetes), anatomical (e.g.) left main, proximal left anterior descending artery, bifurcation, calcification, cardiologist's expertise and patient's preference.

Regular physical activity is associated with a decrease in cardiac morbidity and mortality in patients with stable coronary disease. Cardiac rehabilitation is commonly offered after an MI or recent coronary intervention, but should be considered in all patients with CAD including those with chronic angina. Exercise training should be advocated to improve exercise capacity and reduce myocardial oxygen consumption.

Figure 1

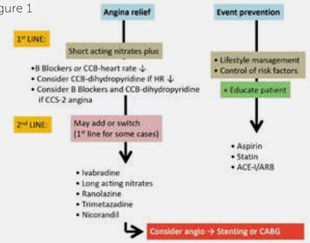
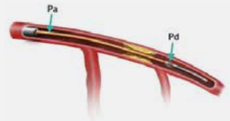


Figure 2
Pressure wire assessment of the fractional flow reserve across plaque stenosis of intermediate severity



By **Dr. Rohit Khurana**
Senior Consultant Cardiologist
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VALVULAR HEART DISEASE

EXERCISING WITH VALVULAR HEART DISEASE: PRESCRIPTION FOR HEALTH

Exercise is an important component in the prevention and rehabilitation of many forms of cardiovascular disease, including valvular heart diseases. It has many beneficial effects including lowering blood pressure, cholesterol and blood sugar, and aiding in weight management. Although exercise does not improve the function of diseased valves, it can improve the efficiency of oxygen extraction by the skeletal muscles and improve work capacity of the individual. The key to maximizing the benefits of exercise is to follow a well-designed program that is safe and sustainable over the long term. In order to give safe and effective exercise recommendations to patients suffering from heart valve disease, the following characteristics are useful to take note of:

1) The valves involved, type of abnormality (stenosis or regurgitation) and etiology

2) Severity of the valvular lesion based on echocardiographic and clinical features

3) Presence of adverse secondary features such as left ventricular systolic dysfunction, chamber dilatation, exercise induced pulmonary hypertension on echo, or exercise induced hypotension or syncope

4) Evidence of concurrent significant arrhythmias

5) Presence of symptoms, in particular dyspnea, syncope, palpations or angina

A careful history and physical examination can elicit the presence of signs and symptoms suggesting the type and severity of the valvular lesion. Sometimes significant lesions may not be apparent on clinical history and examination alone. A transthoracic echocardiogram then becomes particularly useful in the evaluation. In addition functional stress testing can also be used to assess the significance of valvular lesions when the patient's symptoms are out of proportion to the severity of the lesion based on resting echocardiogram findings. During treadmill or supine bicycle stress echocardiography, deterioration of the valve function may be demonstrated, signifying more severe disease than originally believed.

Principles of exercise recommendation in valvular heart disease

Any patient with suspected valvular heart disease with symptoms or evidence of arrhythmias should be thoroughly evaluated before embarking on exercise. However if the patient has asymptomatic valvular heart disease, physical activity should be encouraged for its multiple health benefits. In general if the condition is mild and there are no accompanying adverse secondary features, then there are no restrictions to exercise of any intensity or participation in competitive sports.
For moderate regurgitant lesions, light to moderate intensity activities are generally allowed. In contrast moderate valvular stenosis should be limited to only light intensity. If more vigorous activity is desired, an exercise stress test may be advisable to assess the suitability and safety. Once any valvular disorder becomes severe, or if there are any adverse secondary features present, vigorous activity or competitive sports are restricted. They should limit themselves to only light activities. If more vigorous exercise is desired, they should be carefully assessed by a cardiologist, and exercise testing carried out with caution. Strength training is also generally not recommended in valvular stenosis.
Most valve abnormalities can be corrected with surgical or percutaneous procedures. Following surgery, patients are also encouraged to begin an exercise program to improve exercise tolerance and prevent other heart problems. Patients with bioprosthetic or mechanical valves should limit themselves to moderate or lower intensity exercise training. Patients on anticoagulation therapy (warfarin) for mechanical valves or atrial fibrillation should avoid contact sports. When in doubt, always start at low intensity and shorter durations, choosing lower impact activities such as walking, cycling or water exercises. Stress testing can always be done to determine a safe level of intensity and formulate an exercise prescription in order to keep individuals active and maximize their functional ability. Serial evaluation is required as valve status may change with time, necessitating matching changes in the exercise recommendations.

**Sources: ACSM's Guidelines for Exercise Testing and Prescription; 36th Bethesda Conference, Task force 3: Valvular Heart Disease.*

By **Dr. Peter Ting**

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The Harley Street Heart & Cancer Centre

BREAST CANCER

CONSERVING FEMINITY AFTER BREAST CANCER

Breast cancer is an emotional disease. Apart from fighting to surviving the disease, the woman has to cope with the physical changes surgical treatment would bring to her breast and body image, which can alter her perception of her sexual wholeness and self-esteem. Hence, for most women, breast conserving surgery (BCS): which removes the cancer and spares the rest of the breast is a welcoming alternative over mastectomy whenever women are given the choice. When coupled with post-operative radiotherapy, survival rates are equivalent to that of mastectomy and superior cosmetic and psychological outcomes.

The success of BCS relies on complete removal of cancer while preserving the natural shape and form of the breast, which may present as a surgical dilemma since volume loss is one of the key factors leading to poor post-surgical appearance of a deformed or distorted-looking breast.

A New Technique
Oncoplastic breast-conserving surgery (OBCS) was conceived to resolve the conflict of optimizing resection volumes to achieve cancer clearance and sparing sufficient tissue to preserve an acceptable post surgical appearance. Integration of plastic surgical techniques to reconstruct the defect following cancer excision not only allows very wide resections that minimizes incomplete cancer clearance but also serves to extend the option of BCS to a group of women where mastectomies would traditionally have been recommended. This occurs where adequate cancer clearance cannot be achieved without causing significant deformity in the breast e.g. where excisions of more than 20% of breast volume is anticipated and for cancers located in central, medial or inferior aspects of the breast. Women with heavy pendulous breasts present a unique group who in addition to cancer resection; may derive additional benefit from this approach through removal of the cancer through breast reduction techniques done at the same time.

Resection defects are primarily reconstructed by volume displacement or volume replacement techniques. Volume displacement is particularly suited for women with heavy, pendulous breasts although women with medium-sized breasts with a degree of breast sagginess may be suitable as well. Various techniques reshape and rearrange the remaining breast tissue following excision to create a homogeneous redistribution of volume loss. The resultant breast is smaller but retains its natural shape and appearance. Established techniques for cosmetic breast reduction are adopted in this approach to excise cancers as part of tissues that are removed in the process. The opposite healthy breast may be reduced for symmetry during the same surgery or at a later date. Although OBCS may appear to involve extensive surgery and scarring, most patients do not spend longer than a night in the hospital and most of the scars are well concealed in the area around the nipple or in the breast folds.

Volume replacement techniques may have a role for women with small breasts with little remaining breast volume for displacement following cancer excision and still desire breast conservation. These techniques import local or regional soft tissue flaps to fill the excision defect without the need for rearranging the remaining breast tissue or further surgery to obtain symmetry for the opposite breast.

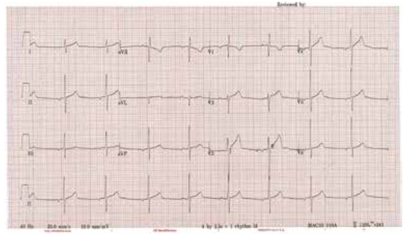
Current research has shown that OBCS is safe and does not result in higher cancer relapse compared to standard BCS but have uniformly demonstrated superior cosmetic and patient satisfaction outcomes together with an improved quality of life. OBCS began as a novel concept to improve the cosmetic outcomes of BCS but has since evolved into a vast repertoire of techniques that can be applied to a spectrum of well selected patients to produce an optimal outcome that treats both the cancer as well as the woman's psyche.

By **Dr. Esther Chuwa**

Consultant Breast and General Surgeon
Esther Chuwa BreastCare Practice

ECG QUIZ

Case Vignette:
This 47 year old asymptomatic man presented to the clinic for a 2nd opinion on his ECG. He regularly enjoys triathlons and has had no prior cardiac health concerns.



Questions:

- What is the diagnosis?
- How would you manage him?

*Answer is available on our website ***http://www.harleystreet.sg/quiz-answers/2016-quiz/"***

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MEDBULLETIN SEPTEMBER2016

THE HARLEY STREET HEART & CANCER CENTRE

From left to right:
Dr. Sue Lo, Dr. Reginald Liew, Dr. Peter Ting, Dr. Ooi Wei Seong, Dr. Rohit Khurana

INTRODUCTION

Greetings from the Harley Street Heart and Cancer Centre. We are pleased to present our second newsletter of 2016 in which we aim to provide the busy clinician with practical updates on the latest advances in the fields of cardiology and oncology.

In this edition, our cardiologists provide important summary points from the latest international guidelines for the management of atrial fibrillation, chronic stable angina and valvular heart disease. The articles have been written with the family doctor/ general physician in mind as these conditions are commonly encountered in general practice and optimal management requires a combined effort between the family physician and specialist. Our oncologist, Dr. Ooi Wei Seong, provides an update on the latest recommendations regarding screening for lung cancer. In this edition, our guest article on oncoplastic breast conserving surgery, written by consultant breast surgeon Dr. Esther Chuwa, describes the benefits of the technique over conventional breast surgery. As with previous issues, we end with a small clinical quiz which is aimed to challenge your clinical skills! Answers can be found on our website page at the end of the quiz.

We hope that you will find these short articles interesting, of use in your daily practice and enjoy the read. Please feel free to contact us (at ***enquiries@harleystreet.sg***) if you have any feedback on them or would like to request any specific topics in future editions.

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