

# SCT Newsletter



# July/August 2015

Hello and welcome to the July/August edition of the SCT newsletter.

## **Annual general meeting**

The SCT AGM will take place on Wednesday the 28th of October. If any members have an item that they would like raised then please e-mail the council.

## **Council nomination forms**

Nomination forms will be sent out soon so you can cast your vote for the SCT council. Please keep an eye out for these hitting your inbox.

## **CSANZ case report**

Many thanks to Jeni Stratford for providing an interesting report from the CSANZ conference. You will find this attached as a separate document.

## **Contributions to the newsletter**

Contributions to the newsletter are very welcome and submissions from any discipline would be great. Please e-mail anything you would like to submit to me at [gary.zealand@hbdhb.govt.nz](mailto:gary.zealand@hbdhb.govt.nz). Without submissions from members there is a high probability that you will be presented with a stream of echo-centric 'case studies that aren't really case studies' written by me. And on that note....

## An Irresistible force vs an immovable object

This case concerns a gentleman with idiopathic pulmonary fibrosis,



He had an echocardiogram to assess the pulmonary artery pressure and a large pericardial effusion was discovered.

The right heart was severely dilated with severely impaired RV free wall contraction.



Pulmonary artery systolic pressure was significantly elevated at 114mmHg with a systemic blood pressure of 102/72mmHg.

Not very much is currently understood about the aetiology of pericardial effusion in patients with pulmonary hypertension but it is thought that the most probable mechanism of accumulation of pericardial fluid in patients with idiopathic pulmonary artery hypertension is transudation and impaired re-absorption of pericardial fluid due to elevated venous hydrostatic pressure in the setting of cor pulmonale (Mars 2010). The sight of a pericardial effusion on echo takes you down a path of looking for certain signs in order to detect haemodynamic compromise as a result of increased intra-pericardial pressure. An echocardiographer can usually rely on the solid ground of these key signs;

- ♥ Diastolic collapse of the right ventricular free wall (often with collapse of the right atrial wall).
- ♥ Dilated inferior vena cava with no collapse on inspiration.
- ♥ Respiratory variation of ventricular filling.

But how do you assess for tamponade when this solid ground becomes shaky?

Cardiac tamponade is unique in pulmonary hypertension because right atrial and ventricular diastolic collapse, pulsus paradoxus, and hypotension are usually absent (Plotnick 1995) and the predictive accuracy of the echocardiographic signs of tamponade are significantly reduced. Limited evidence from the cases studies suggests that these patients can develop atypical cardiac tamponade characterised by left ventricular compression (Sahay 2013). This can present as diastolic collapse of left atrium initially and later on in left ventricular collapse due to a transient reversal of the transmural pressure (Mars 2010). In our case there was isolated collapse of the left atrium and due to the controversial nature of drainage of large effusions in patients with pulmonary hypertension, a second opinion was sought. The final decision on how to proceed in this case is still pending but the take home message in assessing pericardial effusions in patients with severe pulmonary hypertension is that it pays to think outside of the right ventricle.

Plotnick GD, Rubin DC, Feliciano Z, Ziskind AA. Pulmonary hypertension decreases the predictive accuracy of echocardiographic clues for cardiac tamponade. *Chest* 1995;107:919–924.

Mars T, Mikolavcic H, Salobir B, Podbregar M. Echocardiography of isolated subacute left heart tamponade in a patient with cor pulmonale and circumferential pericardial effusion. *Cardiovascular Ultrasound* 2010, 8:27

Sahay S, Tonelli A. Pericardial effusion in pulmonary arterial hypertension. *Pulm Circ* 2013;3(3):467–477.

Jeni Stratford

## ***CSANZ 2015 Auckland***

I would like to thank Wakefield Heart Centre and the Society for the opportunity to travel to the CSANZ 2015 conference in Auckland. I found all the sessions of interest and really enjoyed meeting up with technicians from all around the country. I will share a few of the key points from the sessions.

### ***Atrial Fibrillation Symposium***

- **Patrick Gladding –Genetics**

AF genetics is a rapidly evolving area which will assist in risk assessment.

↓**Gene bank connected to diagnostic lab**

(collect data → create biobank → share)

↓**Electronic database**

**Digital avatar**

Wireless telemedicine could detect AF in 60 secs.

Proposed AF genomic test - \$20 test swab.

- **Gunnar Gislason – Antithrombotic Treatment in AF, balancing benefit and risk.**

The prevalence of AF is predicted to more than double by 2050.

Management objectives: - Prevention of complications

-Relief of symptoms.

- Assess using CHADS2VAS and HASBLED scores.

- Bleeding is common in early treatment (1<sup>st</sup> 30 days), 30 – 90 days more stable.

- Bleeding is relatively rare compared to risk of strokes.

- **Iain Melton – AF Drug Advances**

AF treatment options : -Rate control

-Restore or maintain SR

-Maintain quality of life

-Prevent morbidity

No new drugs registered in NZ in over 20 yrs.

**Amiodorone 1967**-has greater non cardiac risks, but is the most likely to maintain SR

**Drugs Used** -Hypo/hyperthyroidism. – Peripheral neuropathy.

To restore

**Sinus rhythm** **Flecainide- 1975**

**Propafenone- 1976**

**Sotalol- 1992** (leading cause of Torsades)

**Dronedarone** 2009 approved by FDA

-Amiodorone – like compound. (Not as effective)

-Lacks thyroid toxicities.

-Short half life.

-Pulmonary toxicity rare.

-Hepatotoxicity a problem.

-contraindicated in class iv HF or lesser HF with recent decompensation.

**Vernakalant** 2010

-IV agent

-Multi channel blocker.

-Faster action than amiodorone.

- **Darren Hooks – Ablation Advances**

-Not all AF is equal.

-AF has a wide spectrum of complexity.

PAF → CAF

- Frequent PAB's leading to AF is ideal for ablation.

- AF for a year is harder

-MRI useful to assess scarring. (limited scarring ideal)

History: -AF duration.

-Co morbidities: Heart failure mechanism

Hypertension

Obstructive sleep apnoea

Obesity

Diabetes

-Imaging.

-Surgical isolation procedure - 1980 –Williams

Corridor procedure – 1985 – Guradon

Maze procedure – 1993 – Cox

-Ablation, catheter based 'lines' – any gaps and Tachy will break through. Need durable lesion with no gaps.

Late 1990's – Pulmonary vein triggers of PAF.

1998 – mapped where triggers were

Last decade – 3D mapping and navigation systems.

-Reduced risk of pulmonary vein stenosis.

-Contact force catheters (direction and amount of force).

-Single shot catheters reduce procedure time.

Pulmonary vein isolated rapidly

(small nos. of patients – fistulas)

2 cycles of 4 min freezes. Shorter time better tolerated by pts.

-Pacing the line – pace where ablated to test.

### **Why does Ablation still fail?**

- Lesion durability
- Lesion transmural ( through the wall of an organ. Affecting entire thickness of wall)
- Non pulmonary vein triggers.
- No good strategy to target the substrate that maintains AF.
- Failure to address underlying condition. Obese pts who have 10% weight loss are more likely to maintain SR.

### **Patient selection in NZ**

- $\leq 70$  yrs.
- Paroxysmal  $\rightarrow$  Persistent  $\rightarrow$  Longstanding (order of preference).
- Minimal structural heart disease and left atrial enlargement.
- Secondary Prevention and Cardiac Rehabilitation

## ***Secondary Prevention and Cardiac Rehabilitation.***

### • **Gerry Devlin – Secondary Prevention in NZ - Current Challenges.**

- 75% decrease in mortality in the next 5 yrs compared to last. Six hrs/day increase in life expectancy.
- Disparities in CVD prevalence and care.
- People with heart disease will have further events. 13% of people with known coronary disease have a 46% chance of further events.
- Understand the benefits of compliance.
- Appropriate measures for individual pts.

Online 'Heart Help'. NZ Heart Foundation.

Physical activity reduces mortality.

Smoking cessation.

### • **Julie Redfern – Improving Clinical Practise in Australia.**

'All patients with CAD be offered / to receive an effective model of secondary prevention in accordance with their needs and preferences.'

- Need to target people with existing disease. Repeat CHD/ACS events are more likely to be fatal.
- Secondary prevention is not really transferred to practise.
- Past Secondary Prevention :

**1960's** – Post bed rest for M.I

← CABG

**1970's** –Supervised hospital exercise

**1980's** – Centre based

← Angioplasty

Comprehensive rehab counselling

← Stents

**2000's** – Some telephone support

### **How to improve Secondary Prevention:**

- Leadership and advocacy. – Global and national alliances.
- Guidelines and standards.
- Training and education.
- Research and service redesign.
- More people are surviving which means an increase in people living with CHD.

- **Geoff Kira and Fiona Doolan-Noble – Cardiac Services in NZ.**

The face of rehabilitation is changing as smoking decreases and obesity increases. ? Younger patients.

#### My Action Programme

- Virtual health assistants  
Heart Help – NZ Heart Foundation.  
Online action plans, food switch.
- Need to identify and prioritise areas for change and action.  
Core components – equity and access to services.

- **Gina Williams – Where to from here?**

Developing cardiac rehab online. Heart Help is the 1<sup>st</sup> steps for people living with heart disease and their families.

Cardiac Rehab- The Facts- One event increases risk of another.

-Healthy lifestyle reduces mortality.

The Problem – Low uptake –Maori

- Pacific Island
- Poor
- Rural

- Woman

The Challenge – Develop innovative ways to improve daily living.

Nearly 90% of New Zealanders use the internet. Greater than 60% look up health information monthly.

Heart Help is in its first steps – start of a new beginning

-Mobile friendly.

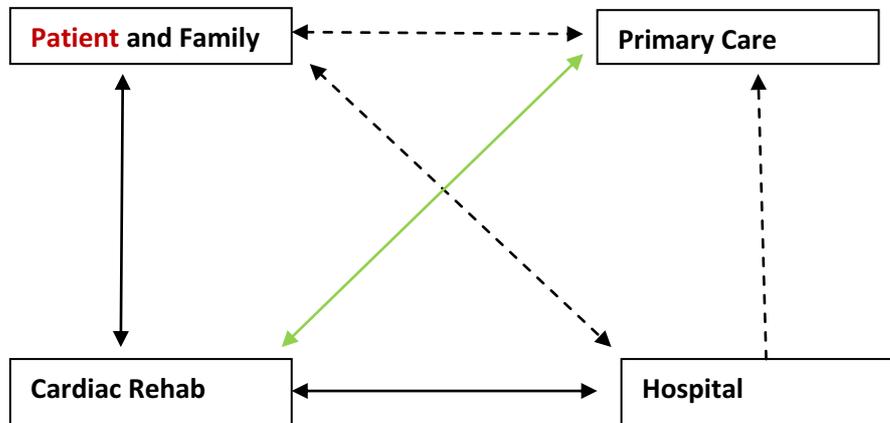
- Videos of ' real' people

Go through at your own pace and usually take in more information.

- Interactive
- Questions and answers
- Quizzes
- Myth busters

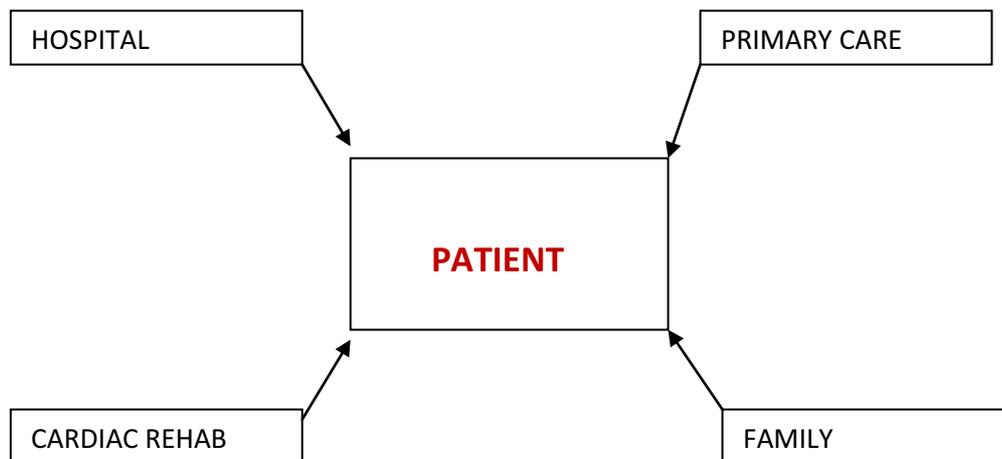
• **Fraser Hamilton GP – Primary Care Rehabilitation.**

Current Information sharing



- > Patchy info one way
- ←----- Patchy info both ways
- ====> Good info both ways
- > This step is missing

## Ideal information sharing



Could do a similar check as the Diabetic annual review – not necessarily 1 visit, can be spread over the year.

Nurses could upskill in CV disease to oversee patients, not confined to 15min Doctors apt.

- **Cathy Beazley – Rural Setting, Nursing Led Cardiac Rehab.**

- Hokianga based – 650 000 population

- Unsealed Rds.

- 9 peripheral clinics.

- Visiting cardiologist every 6wks for 2-3 days.

- Home visits are the majority of work.

- Provides action plan

- Medication reconciliation.

- Diet focus: portion size, quantities, sodium, dietician.

- Case Study: 72 yr old female, PCI 2007, CABG 2014, STEMI

At 3mths became unwell, LOC, Faecal incontinence, clonic seizures, T wave inversion on ECG. Pt very frustrated.

Nurse inquiry led to discovery of bee sting – ACE inhibitors increases the severity of allergic reactions. Medications changed.

- **Stacey Reading – Exercise in Cardiac Rehab- Time to Change the Prescription?**

High Intensity Interval Training (HIIT).

Sprint → Recover → Sprint through neighbourhood.

High muscle contractions = Increased time spent at high intensity work effort.

25 mins in length.

Moderate Intensity Training

20 – 60mins of moderate training, strength training, high reps – low intensity. Flexibility and balance recommended for normal community.

- The purpose of rehab exercise should be to improve functional capacity.
- The improvement of peak aerobic capacity requires 90 – 100%intensity.
- HIIT used in CAD or Post MI pts to improve VO2 peak.

HIIT 21%

Continuous moderate training 13%

- Patients using HIIT- lower BP dias/sys
  - reduced oxidative stress
  - better mitochondrial function

Seem to have better outcomes but still early days.

Patient Selection:- Follow current contraindications.

- Lead in 2 – 4 wks at moderate exercise, monitor ECG and haemodynamic response.
- Use shorter intervals based on aerobic power rather than target HR
- Progression
- Treadmill testing to establish their Max HR rather than age related for beta-blocker use.

## ***Medtronic Breakfast***

- **Rajiv Mahajan / Martin Stiles – Link between Cryptogenic Stroke and Atrial Fibrillation.**

- Survival from non AF stroke is more likely.

- 1 in 5 stroke pts have AF.

- Cryptogenic stroke = 25 – 40% of strokes.

- Risk of recurrent stroke is higher.

- Detection of AF after stroke indicates higher recurrence rates.

- Symptoms are unreliable predictors of AF. A large proportion of AF episodes are asymptomatic.

- Asymptomatic AF conveys the same stroke risk as symptomatic.

- PAF conveys similar stroke risk as permanent AF.

- Anticoagulant use in cryptogenic stroke patients is limited by cost and the risk of major bleeding.

- Monitoring = best practise.

- Loop recorder is very reliable in picking up AF. Holter monitors are resource intensive and event monitors rely on pt symptoms.

- Continuous monitoring with loop recorders is 7 times more likely to find AF than standard care at 12mths.

- Reveal cost = \$3200

- Seven days monitor, stick on device. Disposable pack of 4, transmit data for 30 days.

## ***Cardiovascular Disease in the Elderly.***

- **Katherine Bloomfield – Assessment of the Elderly Patient.**

-Post op cognitive decline, the post op delirium incidence up to 73% in cardiac surgery pts.

-Risks: -cognitive impairment

-age

-depression

-Infection / inflammation

-sleep disturbances

-Assessment, useful tips

-falls

-cognition – name months backwards starting at December.

- draw a clock face.

-Gait – geriatric vital sign

-frailty

-post op delirium

-Walking is a higher order function. Falls usually indicate impairment in multiple domains.

Gait – can they walk and talk

Sarcopenia – loss of muscle mass, relates to frailty which increases post op complications

-Higher rates of malnutrition in the elderly.

- Potential drug interactions.

-Explore patient preferences as 89% would reject treatment if it resulted in cognitive impairment.

What are the patients goals?

- **David Heaven – AF does it Change in the Elderly?**

-The lifetime risk of going into AF is 1/4 after 40 yrs of age.

Fivefold increased risk of stroke with age.

Three times increase in heart failure.

-AFFIRM trial (New England journal of Medicine 2002)

Median age 70yrs

High degree of co morbidities

PAF / AF in the elderly is the norm. The risk of stroke increases in elderly with AF.

- **David Smythe – PCI in the Elderly.**

-The developing problem, large numbers of elderly pts in the next 50yrs.

- Long life expectancy does not equal good quality years.

Prevalence of CAD in those aged greater than 75 yrs.

-PCI risk factors: Increased calcification

Increased tortuosity

Increased left main disease

Visible thrombus

-Assess frailty, protect the kidneys and reduce bleeding risk.

- **Rajiv Mahajan – Atrial Fibrillation and Weight loss**

-The cost of healthcare for AF is huge.

-**Risk factors for AF:** Aging

Increased BP

Heart failure

Diabetes

Valve disease

IHD

Obesity

Sleep apnoea

-Fatty infiltration of left atrium in obese pts (biopsies performed on obese pts showed fatty substrate). Like fibrosis this may cause conduction interference.

**-Is the effect reduced after weight loss?**

Reversal of conduction abnormalities and atrial fibrosis with weight reduction @ 15% loss and 30% loss

**Test**

Lean Sheep Stable      Obese Sheep      Weight loss 15%      Weight loss 30%

- As weight reduced, AF symptoms reduced. BMI was greater than 27.
- A structured program was used with a dedicated clinic and a meal plan with reduced carbs. They achieved  $\geq 10\%$  weight reduction. Had a life style journal and 30mins of exercise/day.

They found a decrease in systolic BP, Reduced LV hypertrophy, a decrease in glucose intolerance and decrease in fasting glucose.

$\geq 10\%$  loss of weight = 86% reduction in AF symptoms.

**-Conclusion:** Progressive atrial substrate due to obesity.

- Weight reduction and management of cardio-metabolic risk factors

- Reverses AF substrate.
- Reduces AF burden and symptoms.
- Improves outcomes of AF ablation.

-Benefits when BMI drops below 27

-Aim for 10% weight loss.

## ***Heart Failure: Late stage HF***

- **Peter MacDonald – Mechanical Support For the Failing Heart.**

-Ventrassist, Heartwave – continuous flow device (\$100 000), hospitalisation (\$200 000).

Mechanical support for the ventricle. Device allows mobility with two shoulder bags that contain controls and batteries.

-For older pts this provides a better quality of life and for younger pts it acts as a bridge to transplant.

-Used to reduce frailty to move ahead with transplant.

-Pannus formation is a problem where an abnormal layer of fibrovascular tissue or granulation tissue forms.

- **Cara Wasywich – A NZ guide to Cardiac Transplant.**

Treatments for advanced HF – end stage HF

Consideration of devices (CRT /ICD)

Palliative care

Heart transplant

Transplant potential

Have advanced HF with no other treatment options

Good self- management skills

No other conditions/features which make a positive outcome unlikely

Suitable age, adults less than 65yrs and children heavier than 20kg

New Zealand performs 10 – 19/year.

Initial clinic visit Assess HF severity: symptoms, signs, hospital admission, ECHO, cardiopulmonary exercise test. No other treatment options, the pts understanding of process, desire for transplant and psychosocial assessment: support, vices, ability to engage with medical team.

Contraindications

Age

Pulmonary increased BP

Primary systemic disease

Renal dysfunction

Psychosocial issues

Recent malignancy ( less than 5yrs)

Morbid obesity (over 30 BMI) – hard to find similar sized heart.

Cachexia – not physically robust

Significant pulmonary vascular disease or cardiovascular disease

Diabetes with end organ damage

#### Who gets transplants?

Most pts 20 – 40yrs. 80% male, 10% less than 20yrs, 17% congenital heart group.

Outcomes – Excellent long term survival although not normalised.

-Malignancy is an issue due to immunosuppression.

- **Liz Painter – Psychological Aspects of Transplant.**

-Assessment of suitability:

Past behaviour best predictor.

Be able to follow complex medical regime.

Psychological resilience.

-139 pts referred 56 declined mainly due to psychosocial reasons

Substance use (4)

Adherence issues (2)

Antisocial behaviour (1)

Mood disorder (1)

Support (1)

More than one reason (4)

-High rates of non- adherence (25%) even though pre-screened.