

COUGH SYNCOPE: CLINICAL AND INVESTIGATIONAL PROFILE OF SEVEN PATIENTS. G Trim*, S Nicholls, W Saw, M Barlow, J Leitch.

Department of Cardiovascular Medicine, John Hunter Hospital, Newcastle, New South Wales.

Introduction: Cough syncope is a form of syncope which is thought to be due to a reflex-mediated cardioinhibitory and/or vasodepressor response to coughing, leading to a transient loss of consciousness. The clinical correlates of this condition and the usefulness of investigations are still relatively poorly understood.

Method: We reviewed and analysed the medical records of seven patients with a history of typical cough syncope (defined as syncope during paroxysms of coughing but not at other times), including their age, gender, weight, smoking history, comorbidity, and investigations performed.

Results: All seven patients were male. The average age was 53 years (range 38-68 years). Average weight was 85 kg (range 67-104 kg). Five of the seven (71%) had a smoking history; six (86%) had chronic airways disease, five due to smoking and one due to asthma. All had normal ECGs. Four had echocardiograms, two of which were normal, and two of which showed evidence of diastolic dysfunction. Carotid sinus massage was normal in all patients. Tilt table testing was negative for vasodepressor syncope in all seven patients. Two of three in whom coughing was induced experienced syncope or presyncope in association with documented hypotension. One of five in whom the Valsalva manoeuvre was performed had their presyncopal symptoms reproduced in association with hypotension.

Conclusion: Cough syncope typically occurs in middle-aged men with chronic airways disease. Tilt table testing was negative in all seven patients and hence is not a sensitive diagnostic test for this condition. Induction of coughing and performance of the Valsalva manoeuvre may have some diagnostic value. Diagnosis remains primarily clinical, however, and based on the characteristic history. Treatment is difficult but usually involves measures to reduce coughing spells, and smoking cessation.

ACTIVE LEADS ARE MORE LIKELY TO CAUSE RBBB LIKE MORPHOLOGY IN PACED RHYTHM. *G Trim, S Nicholls, W Saw, J Leitch, M Barlow. Department of Cardiovascular Medicine, John Hunter Hospital, Newcastle, New South Wales.

Introduction: Active (or screw-in) ventricular leads may be employed due to perceived greater ease, security and flexibility of placement. Passive (tined) leads positioned in the right ventricular apex are usually expected to produce a LBBB like morphology on the 12-lead ECG in paced rhythm. RBBB like morphology raises the concern that the lead is incorrectly placed, either in the coronary sinus or the left ventricle via a patent foramen ovale. It is our impression that active leads are more likely to produce RBBB like morphology than passive leads.

Method: We compared the 12-lead ECGs in paced rhythm of 25 active and 25 passive ventricular pacing leads. The ECG morphology was classified as either LBBB like (dominant S wave in V1 and V2, with transition to dominant R wave in V4 or later) or RBBB like (dominant R wave in V1 and/or V2). The active leads employed were Medtronic 5068 and the passive leads were Medtronic 5024. All leads were correctly placed in the right ventricular apex as judged by PA and lateral chest x-ray.

Results: Nine of 25 active leads (36%) produced RBBB like morphology, whereas only one of 25 passive leads (4%) produced RBBB like morphology. This result was statistically significant ($p=0.037$ by 2-tailed Fisher's exact test).

Conclusion: Thirty-six percent of active leads in the right ventricular apex produced a RBBB like morphology compared with only 4% of passive leads. Presumably the active lead screw, which protrudes 2-3 mm from the tip of the lead, is responsible for a left to right septal activation pattern rather than the reverse, which is typically seen with passive leads. Therefore, providing correct lead position is confirmed on PA and lateral chest x-rays, RBBB like morphology need not cause concern that an active ventricular lead is incorrectly placed.

ASYMPTOMATIC RADIAL ARTERY OCCLUSION IS COMMON AFTER CARDIAC CATHETERISATION VIA THE RADIAL APPROACH. *G Trim, S Nicholls, W Saw, B Bastian, S Thambar, G Bellamy. Department of Cardiovascular Medicine, John Hunter Hospital, Newcastle.

Introduction: Use of the radial artery approach for cardiac catheterisation has been promoted as an alternative to the standard femoral approach, or the brachial approach, due to perceived advantages, such as ease of artery compressibility post procedure, patient comfort, and as a means of avoiding abdominal aortic aneurysms and lower limb vascular access problems. We set out to assess the performance of the radial approach for cardiac catheterisation prospectively.

Methods: We conducted a clinical and ultrasound assessment of 25 patients in whom the radial artery approach was used. We documented the indication for a radial approach, age, gender and weight, whether the procedure was for diagnostic catheterisation or angioplasty, the patients' cardiovascular risk factors, duration of the procedure, dose of heparin given, and contrast volume. All patients had the Allen test performed pre-procedure to ensure adequate collateral flow to the hand in the event of radial artery occlusion. There were three operators, all of whom were experienced and high volume angiographers/angioplastiers, although all were new to the radial approach. All patients were assessed clinically and by vascular ultrasound of the radial artery post procedure.

Results: There were twenty males and five females. In three patients (12%) there was technical failure and catheterisation could not be completed from the radial artery. In the remaining 22 patients, there were no clinical complications, but six (24%) had occluded radial arteries, two (8%) had partially occluded radial arteries, and fourteen (56%) were patent, on duplex ultrasound examination. The total procedure count included thirteen diagnostic angiograms and twelve angioplasties, but the majority of partial or complete radial artery occlusions (6 out of 8, or 75%) were in diagnostic angiograms rather than angioplasty cases. Of the five female patients, three (60%) had occlusions, one (20%) had partial occlusion, in one (20%) there was technical failure, and none had a fully complication-free procedure. Of the twenty male patients, two (10%) had technical failure, three (15%) had occlusion, and one (5%) had partial occlusion, while 70% had successful procedures.

Conclusion: While there were no clinical complications in those patients in whom radial artery catheterisation was successfully completed, there was a high rate of asymptomatic partial or total occlusion of the radial artery post catheterisation. There were proportionately more occlusions in female patients, and in those having diagnostic rather than therapeutic procedures. The latter may be due to the longer procedure times and greater number of catheters employed in diagnostic cases than in angioplasties. The radial approach may best be employed in selected cases rather than generally.

HIGH TRANSTHORACIC DEFIBRILLATION THRESHOLD PREDICTS RECURRENCE OF ATRIAL FIBRILLATION. S

Nicholls, L Savage, G Trim, W Saw, M Barlow and J Leitch.

Department of Cardiovascular Medicine. John Hunter Hospital. Newcastle, New South Wales.

Introduction: It is unclear whether defibrillation threshold is related to the likelihood of recurrence of atrial fibrillation.

Method: 44 consecutive patients electrically cardioverted from atrial fibrillation were identified. Case records were reviewed and recurrence of atrial fibrillation during the first 12 months was determined. Transthoracic defibrillation was performed initially at 50 Joules and then increased to 100, 200, 300 and 360 Joules. Defibrillation threshold was defined as the lowest successful energy required to revert the patient from atrial fibrillation to sinus rhythm. Patients were stratified according to defibrillation threshold.

Results: Mean age was 63.5 years and body mass index 28.5. 86% patients received antiarrhythmic therapy at the time of cardioversion (32% sotalol, 32% beta blockers, 14% amiodarone and 27% digoxin). 25 patients had a low defibrillation threshold (less than or equal to 200 Joules). Patients in this group were younger (59.5 vs. 69 years), had been in atrial fibrillation for a shorter time prior to cardioversion and were less likely to redevelop atrial fibrillation during the next 12 months (28% vs. 63% $p < .05$) when compared with those patients with a high defibrillation threshold (greater than 200 joules). The median time to recurrence of atrial fibrillation was greater in the low defibrillation threshold group (264 vs. 130 days).

Conclusion: Patients with a lower defibrillation threshold at the time of transthoracic cardioversion from atrial fibrillation take longer to revert to atrial fibrillation and are more likely to remain in sinus rhythm.

INITIAL EXPERIENCES WITH BIVENTRICULAR CARDIAC PACING FOR THE TREATMENT OF HEART FAILURE. P Hereford-Ashley*, S Nicholls, W Saw and J W Leitch. Cardiovascular Unit, John Hunter Hospital, Newcastle.

Introduction: Biventricular (BV) cardiac pacing has been proposed to benefit patients with heart failure. We describe our initial experiences with biventricular pacing, through our participation in the Medtronic InSync Registry.

Results: We enrolled 12 patients in the Registry aged 70 ± 5 years, with an ejection fraction of $18 \pm 4\%$, left bundle branch block and a QRS duration of 159 ± 25 msec. The mean procedure time was 129 minutes (range 87 to 270), with a mean fluoroscopy time of 45 minutes (range 14 to 174). The mean results at baseline and with follow-up are summarised in the table below.

	QRS duration (msec)	6 minute walk (meters)	E wave (m/sec)	A wave (m/sec)	BV Threshold (volts)
Baseline	159	281	0.78	0.56	N/A
Implant	N/A	N/A	N/A	N/A	2.0
Predischarge	157	N/A	N/A	N/A	1.5
1 month	160	332	1.00	0.90	1.9
3 month	147	345	0.91	0.64	2.3

Placement of the left ventricular (LV) lead in a lateral or postero-lateral vessel (8 patients) resulted in lower BV pacing threshold when compared with thresholds of leads placed in an anterior branch (1.8 vs 2.8 volts respectively). LV lead placement was limited by variations between patients in coronary venous vasculature and lead stability. Three patients were in atrial fibrillation, in these patients a standard dual chamber pacemaker was inserted with the LV lead connected to the atrial port of the header. The procedure was unsuccessful in 2 patients because of failure to cannulate the coronary sinus (1 patient) or failure to find a stable site in a LV vein (1 patient). One procedure was complicated by an AV fistula, which was closed percutaneously.

Conclusion: Biventricular pacing is technically feasible with acceptable thresholds in most patients but prolonged procedures are required in some individuals. Assessment of clinical benefit requires controlled trials.

NECK TUMOURS PRESENTING AS AN UNUSUAL AND POTENTIALLY TREATABLE CAUSE OF SYNCOPE. S Nicholls, G Trim, W Saw, P Hereford-Ashley, M Barlow and J Leitch. Department of Cardiovascular Medicine. John Hunter Hospital. Newcastle, New South Wales.

The diagnosis of syncope can often be difficult with its investigation often unrewarding. A series of three patients with syncope secondary to tumour masses involving the neck are reviewed. (1) A 69 year old man with previous resection of an oropharyngeal squamous cell carcinoma presented with recurrent syncope. Examination revealed a left sided neck mass with the development of complete atrioventricular dissociation and hypotension upon palpation of the mass. Magnetic resonance imaging revealed a mass in the region of the carotid sinus. The mechanism of syncope was thought to be via carotid sinus hypersensitivity. The patient proceeded to permanent pacemaker implantation and combination radiation and chemotherapy. (2) A 76 year old man presented with recurrent postprandial syncope preceded by a burning sensation in the left side of the throat. After a 6 week hospital stay including pacemaker implantation, 2 tilt tests, coronary angiography and electroencephalography the diagnosis was established by computerised tomography of the neck. Subsequent examination revealed subtle cranial nerve palsies consistent with a left sided jugular foramen syndrome. Nasoendoscopy revealed a nasopharyngeal mass. Biopsy revealed squamous cell carcinoma. The mechanism of syncope was thought to involve a reflex circuit involving the glossopharyngeal and vagus nerves. Permanent pacemaker implantation did not reduce the frequency of syncope. The patient proceeded to combination radiation and chemotherapy with reduced frequency of syncope. (3) A 47 year old man with a history of adenoidal cystic carcinoma, treated with surgical excision and radiation therapy presented with recurrent presyncope. Examination and investigations were unremarkable. The mechanism of syncope was thought to involve carotid sinus hypersensitivity secondary to the effects of radiation therapy. Therapeutic trials are in progress. Dysfunction of various vascular and neurological structures in the neck due to tumour masses or the sequelae of their treatment can result in presyncope and syncope. Neck tumour masses should be considered an uncommon but potentially treatable cause of recurrent syncope and presyncope.

PAPILLARY FIBROELASTOMA: A RARE BUT POTENTIALLY TREATABLE CAUSE OF EMBOLIC STROKE.

W Saw*, S Nicholls, G Trim, K Pont, D Thomson, C Hughes, S Mitchell, and J Leitch.

John Hunter Hospital, Newcastle, New South Wales.

Royal Prince Alfred Hospital, Sydney, New South Wales.

Background: Papillary fibroelastomas (PF) are rare benign tumours and are seldom diagnosed during life. We report a series of three cases, two had recurrent embolic events, and one was diagnosed incidentally.

	Case 1	Case 2	Case 3
Age	31	48	56
Sex	Male	Male	Male
Presentation	Multiple cerebral and splenic embolism	Multiple cerebral embolism	incidental
Site	Atrial aspect of mitral valve	Atrial aspect of Mitral valve	Right ventricular aspect of interventricular septum
Structural heart disease	Nil	Nil	Small membranous VSD
Surgical treatment	Resection and repair of mitral valve	Resection and repair of mitral valve	Resection and repair of VSD
Anticoagulation	12 months	12 months	Nil
Recurrent event	Nil	Nil	-

Discussion: PF are the third most common cause of primary cardiac tumours and 80% of them are found on valvular endothelium. They can occur at the site of high velocity jets. A review of literature reveals 100 cases of PF diagnosed in life. Thromboembolism is the most common complication. Surgical removal of tumour is recommended regardless of symptoms because of potential for embolism. In our series no patient required valve replacement. In one reported series, 90% of patients were treated with excision and 10% required valve replacement. It is common practice to anti-coagulate patients after operation but literature provides no firm evidence regarding duration of anticoagulation. It seems reasonable to discontinue warfarin after a period of 6-12 months.

Conclusion: Papillary fibroelastomas are a rare but potentially treatable cause of cardiac emboli. Prompt identification allows for surgical excision, which generally is curative.

ATRIAL PACING THRESHOLDS ARE AS STABLE AS VENTRICULAR THRESHOLDS AT ONE YEAR AFTER IMPLANTATION.

W Saw*, P Hereford-Ashley, G Trim, S Nicholls, M Barlow, J Leitch.

Cardiovascular Department. John Hunter Hospital. Newcastle, New South Wales, Australia.

Introduction: It is well established that atrial pacing lead thresholds are higher than ventricular thresholds at the time of implantation, however whether this trend continues with a passage of time is unclear.

Method: We retrospectively studied 31 patients who received dual chamber pacemakers with passive atrial and ventricular leads during 1999. The atrial and ventricular pacing thresholds were reviewed at the time of implantation, 3 months, and 12 months. Unpaired Student T Test was used to analyse the data.

Results: Atrial thresholds were higher than ventricular at the time of implant [0.64 \pm 0.24 Vs 0.4 \pm 0.13 P= 0.0001]. Thresholds at three months after implant and at 12 months are shown in following table.

	At implant	At 3 months	At 12 months
Atrial pacing threshold	0.64 \pm 0.24	0.74 \pm 0.64	0.71 \pm 0.47
Ventricular pacing threshold	0.40 \pm 0.13	0.55 \pm 0.16	0.60 \pm 0.26
P value	P=0.0001	P=0.12	P=0.28

Conclusion: Although atrial thresholds at the time of implant were significantly higher than ventricular, the degree of increase in threshold was considerably less in atrial leads at 3 and 12 months. Although this is a relatively small study, the finding suggests atrial pacing thresholds are at least as stable as ventricular at 12 months of implantation. Larger studies are needed to support this view.

List of Publications

1. *"Papillary fibroelastoma: a rare but potentially treatable cause of embolic stroke" (primary author). This will be published in Heart Lung and Circulation in Sep 2001.*
2. *"Clinical presentation of SVT in elderly". This will be submitted to Annual of Geriatrics Medicine.*

Abstracts

1. *"Cough Syncope: clinical and investigations of profile of 7 patients"
This will be presented in The Cardiac Society of Australian and New Zealand Meeting in August 2001*
2. *"Atrial leads threshold are as stable as ventricular leads after 1 year of implantaion"
This will be presented in CSANZ Meeting in August 2001*
3. *"Papillary fibroelastoma: a rare but potentially treatable cause of embolic stroke"
This will be presented in CSANZ Meeting in August 2001*
4. *"Active ventricular leads are more likely to cause RBBB- like morphology in paced rhythm"
This will be presented in CSANZ Meeting in August 2001*
5. *"Asymptomatic radial artery occlusion is common after cardiac catheterisation via the radial approach"
This will be presented in CSANZ Meeting in August 2001*
6. *"Clinical presentation of SVT in Elderly"
It was presented in CSANZ 2000*
7. *"Initial experiences with biventricular pacing for treatment of heart failure"
It was presented in CSANZ 2000*
8. *"High transthoracic defibrillation threshold predicts recurrence of atrial fibrillation" It will be presented in CSANZ August 2001*
9. *"Treatment of heart failure: a tale of 2 cities" It was presented in CSANZ 2000*
10. *"Neck tumours presenting as an unusual and potentially treatable cause of syncope "This will be presented in CSANZ August 2001*