

94 A COMPARISON OF FUNCTIONAL AND ECHOCARDIOGRAPHIC OUTCOMES IN NICE COMPLIANT AND NON-COMPLIANT PATIENTS UNDERGOING CRT IN THE REAL WORLD

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Introduction The National Institute for Clinical Excellence (NICE) define a population of patients that are most likely to respond to cardiac resynchronisation therapy (CRT) and have a favourable health economic profile. Current NICE criteria (technology appraisal; TA120) for CRT include: NYHA class III or IV symptoms despite optimal medical therapy, sinus rhythm, ejection fraction $\leq 35\%$, and either QRS duration >150 ms alone or 120–149 ms together with echocardiographic (echo) evidence of mechanical dyssynchrony. Several randomised clinical trials however have consistently reported beneficial effects of CRT in patients outside current NICE guidelines. In our centre, potential CRT patients are discussed at a multi-disciplinary team (MDT) meeting attended by a heart failure specialist, electrophysiologist, interventional cardiologist, cardiac surgeon and hospital manager. CRT is offered where there is consensus agreement that the individual patient is likely to benefit. This individualised and evidence based approach provides for a comparison of outcomes in NICE compliant (NICE:+ve) and NICE: –ve patients (patients with a clinical need and evidence base supporting CRT, but who do not meet NICE criteria).

Methods Our unit operates an integrated CRT service with pre-assessment, implantation, and follow-up components. Pre-assessment includes clinical evaluation and baseline echo (EF: ejection fraction, and ESV: left ventricular end-systolic volume) and func-

tional characterisation: a) Minnesota quality of life score (QoL), b) 6 min walk test (6MWT), and c) peak oxygen consumption on cardiopulmonary exercise test (VO₂). Follow-up at 3 and 6 months post CRT includes clinical evaluation, device/medical optimisation, and reassessment of echo and functional outcomes. This study involves a retrospective analysis of our CRT database and compares outcomes in NICE:+ve and NICE: –ve patients.

Results Between January 2007 and December 2009, 253 patients received CRT. Complete paired data comparing baseline and 6 month functional and echo data are available for 139 patients; 89 NICE:+ve and 50 NICE: –ve (Abstract 94 table 1). Exclusions for the NICE: –ve patients included: atrial fibrillation (n=19), QRS 120–149 ms without mechanical dyssynchrony (n=12); QRS <120 ms (n=5); pacemaker upgrades (n=9). An additional 5 patients with right bundle branch block and otherwise NICE CRT compliance are analysed as NICE: –ve in this study. Compared to baseline, 6-month outcomes were similar and significantly improved in both NICE:+ve and NICE: –ve groups (Abstract 94 table 2).

Conclusions We observed significantly favourable and similar functional and echocardiographic responses to CRT in patients meeting and not meeting current NICE criteria for CRT. Guidelines should guide therapy but ultimately each therapy should be individualised and evidence based.

95 IMPAIRED CARDIAC ENERGETICS IN DILATED CARDIOMYOPATHY: MAGNETIC RESONANCE SPECTROSCOPY AT 3T

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Introduction The aim was to measure the cardiac phosphocreatine to ATP (PCr/ATP) ratio non-invasively in patients with dilated cardiomyopathy and normal controls, and to correlate the patient's results to symptom status, ejection fraction (EF) and quality of life scores. Dilated cardiomyopathy is known to be associated with cardiac energy deficiency. Magnetic resonance spectroscopy (MRS) has been proposed as a non-invasive method of assessing cardiac energetics and as a method of measuring response to therapy. Interrogation at high field strength improves signal to noise ratio.

Methods 32 patients and 22 control subjects were studied using phosphorus-31 (31P) MRS and patients were classified to NYHA symptom class. In vivo energetics were measured using a commercially available Philips Achieva 3 Tesla scanner and dedicated 31P coil with ISIS volume selection. Java Magnetic Resonance User Interface (jMRUI) was used for analysis. Furthermore, all patients completed a Minnesota Living with Heart Failure (MLWHF) score and underwent echocardiography. LVEF was measured using biplane Simpson's method.

Results The PCr/ATP ratio was significantly reduced in patients (1.35 ± 0.31) compared with control subjects (1.90 ± 0.40 ; $p < 0.005$). The PCr/ATP ratio was correlated with NYHA class ($r = -0.68$, $n = 32$, $p < 0.0005$). No correlation was found with LVEF or MLWHF score.

Conclusions This study confirms the presence of energy deficiency in dilated cardiomyopathy as measured by MRS at 3T. The energy status correlates strongly with symptom status but not with ejection fraction nor quality of life score. Cardiac energetic status is directly proportional to symptoms status and therefore any treatments targeted to improve cardiac energetics may improve patient symptoms in dilated cardiomyopathy.

Abstract 94 Table 1 Characteristics of NICE compliant and non-compliant patients

	NICE: +ve	NICE: –ve
Age: years (SD)	65 (11)	66 (11)
Male: %	83	90
Ejection fraction: % (SD)	22 (7.1)	24 (7.2)
QRS duration: ms (SD)	164 (26)	158 (37)
CRT-Defibrillator: %	57	46

Abstract 94 Table 2 Outcomes in NICE compliant and noncompliant patients

	NICE: +ve (n = 89)	p value (baseline v 6 months)	NICE: –ve (n = 50)	p value (baseline v 6 months)
QOL (score): baseline (SD)	58.2 (23.6)		63.5 (31.7)	
QOL (score): 6 months (SD)	40.1 (25.0)	<0.001	38.9 (25.6)	<0.001
6MWT (m): baseline (SD)	216.4 (118.3)		208.5 (131.8)	
6MWT (m): 6 months (SD)	324.5 (131.2)	<0.001	291.5 (127.5)	<0.01
VO ₂ (ml/kg/min): baseline (SD)	13.2 (5.6)		12.3 (4.0)	
VO ₂ (ml/kg/min): 6 months (SD)	14.4 (3.3)	0.24	12.8 (4.2)	0.64
Ejection fraction- baseline (SD)	21.5 (7.1)		24.3 (7.2)	
Ejection fraction- 6 months (SD)	30.7 (10.4)	<0.001	31.4 (6.6)	<0.001
End-systolic volume- baseline /ml (SD)	185.1 (79.3)		177.2 (67.2)	
End-systolic volume- 6 months /ml (SD)	144.6 (73.5)	0.02	135.2 (57.2)	0.01