A community-based service for patients with congestive cardiac failure: impact on quality of life scores

The authors report on the results of the first 500 referrals to a community-based service for patients with congestive heart failure in West Wiltshire.

Abstract

Echocardiography remains the 'gold standard' for the objective assessment of left ventricular systolic function. Even with the high prevalence of left ventricular systolic dysfunction, echocardiography is not universally available within UK primary care, despite the fact that the condition is predominantly managed within this arena.

We describe a service within one Primary Care Trust, where general practitioners and nurses refer patients who are suspected of having, or who are at high risk of developing heart failure, for a clinical assessment and an echocardiogram. Following this, a treatment plan is formulated and those with systolic dysfunction are followed up by a heart failure nurse. She ensures that the treatment regimen is adhered to and that the correct physiological and biochemical monitoring takes place.

In our study we found that of those referred, only 33% had evidence of left ventricular systolic dysfunction, with 62% showing normal function. Of those patients with left ventricular systolic dysfunction, 86% required a significant change in their medication. Three months after the assessment, using the 'Minnesota Living with Heart Failure Questionnaire', considerable improvement was noted in the quality of life of patients with left ventricular systolic dysfunction. This paper suggests that there is considerable scope for improvement in the management of chronic heart failure.

Key words: primary care, echocardiography, left ventricular systolic dysfunction, quality of life assessments, heart failure.

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Introduction

Congestive cardiac failure is a common condition with a prevalence of between 1–3%.[1-3] It has a poor prognosis with a five year mortality rate ranging from 26-75%.[4] In the over 65 years age group, it is the single most common cause for admission to hospital in the USA, consuming between 1–2% of total annual healthcare expenditure in western countries.[5] Measurements of quality of life reveal poor scores in those patients with heart failure.[6] Angiotensin-converting enzyme (ACE) inhibitors have been shown to reduce mortality and hospitalisation rates.[7-9] Evidence from primary care, however, suggests poor use of ACE inhibitors.[10] A recent report highlights the difficulties general practitioners have with the translation of technical echocardiography reports into clear management plans for patients.[11]

> ***'Measurements of quality of life reveal poor scores in those patients with heart failure'***

Congestive heart failure is a difficult condition to diagnose clinically but echocardiography offers an objective assessment of left ventricular systolic function. The European Working Party Guidelines recommend that heart failure is diagnosed on the basis of appropriate symptoms, plus objective evidence of cardiac function.[12] The ability to obtain this objective evidence using echocardiography is not readily available across the country. Nor, it would seem, are the results clearly understood and able to be translated into a care plan for patients by many general practitioners (GPs) if echo reports are forthcoming.[11] When 600 randomly selected patients thought to have heart failure were assessed by echocardiography, only 25% had evidence of definite left ventricular systolic dysfunction.[13] Other studies have found that just one third have objective evidence of left ventricular systolic dysfunction.[14,15] Specialist nurse intervention has recently been shown to prevent admissions to hospital, reduce time in hospital and reduce re-admission rates.[16]

We describe a community-based service where patients with heart failure or at high risk of developing heart failure who have not had an echocardiogram are referred to a general practitioner and specialist nurse for a full assessment. Following the assessment, a management plan is formulated and follow-up arranged, including a quality of life assessment initially and after three months. We report the results from the first 500 referrals.

Materials and methods

West Wiltshire Primary Care Trust (PCT)

Figure 1. An example of the referral form designed by the West Wiltshire Primary Care Trust, for the community echocardiography service

WEST WILTSHIRE PRIMARY CARE TRUST
ECHOCARDIOGRAPHY SERVICE IN THE COMMUNITY

PART 1 – PLEASE FILL IN PRIOR TO REFERRAL

Name ……Date of Birth……

Address……

……Telephone……

G.P./Practice Address ……..

CARDIAC HISTORY Y/N If yes, details & dates:

e.g. MI/Angina/Valvular problems, H/T, AF, Other ……..

OTHER SIGNIFICANT HISTORY

e.g. Diabetes/Thyroid Disease ……

MEDICATION ……

……

INVESTIGATIONS

	Date	Result	Not Available
Haemoglobin			
Cholesterol			
Blood Sugar			
TSH			
ECG (or attach)			
CXR			

PART 2 – TO BE COMPLETED AT ASSESSMENT DATE:

SYMPTOMS NYHA I
II
III
IV

EXAMINATION

LA	(1.9–3.8)
Aorta	(2–3.7)
IVSd	(0.7–1.1)
LVPwd	(0.7–1.1)
LVd	(3.5–5.6)
LVs	(2.5–4.1)
EF	(65–75%)

ECHO FINDINGS

FINAL ECHO REPORT

TREATMENT/RECOMMENDATION

FURTHER ECHO Y/N (I WILL ORGANISE)

has a population of approximately 115,000 people, mostly living in five medium-sized towns with a significant rural population. The nearest District General Hospital is approximately 12 miles away with a difficult public transport system. Each small town has a community hospital with both in-patient and out-patient facilities. The population has 13 general practices, each one having a British Heart Foundation, trained practice nurse providing coronary heart disease prevention clinics. The PCT has purchased a portable echo machine (Sonoheart) for use by one of us (HW), who also works in the Cardiac Centre at the local District General Hospital. Clinics were set up based at the community hospitals and GPs informed of the service.

Both the GPs and the nurses were encouraged to refer patients who were thought to have heart failure, or who were at high risk of developing it, but who had not yet had an echo. The limitation of the assessment was explained to the GPs so that all suspected valvular lesions, acute and complex problems would continue to be referred to the District General Hospital. A referral form (figure 1) was designed consisting of two halves: the top half filled in by the practice gives patient information, concurrent illnesses, drug regimen; the second half documents the assessment, management plan and follow-up arrangements. Each patient was allocated a 20 minute appointment.

The echo assessment was carried out using standard techniques looking specifically for regional wall abnormalities of the left ventricle as well as chamber size. Following the assessment the results were communicated to the patient and documented on the referral form. This was received by the practice within 48 hours of the assessment. If the recommendation was to change a patient's treatment, they were told to see their doctor within one week. Those found to have left ventricular systolic dysfunction received a follow-up visit within two weeks by the heart failure specialist nurse (EM). At her initial visit, the quality of life assessment (using the 'Minnesota Living with Heart Failure Questionnaire') was performed. This is a patient self-assessment measure developed to evaluate the therapeutic response to interventions for heart failure;[17] it was repeated after three months. The nurse also ensured that the management plan was being adhered to and that the correct physiological and biochemical monitoring was taking place. She communicated directly with the relevant members of the patient's primary healthcare team.

Results

We report the results from the first 500

Table 1. Results from the first 500 referrals

Normal left ventricular systolic function	308	(62%)
Abnormal left ventricular systolic function	167	(33%)
Inadequate images (referred for further assessment)	25	(5%)

Table 2. Changes in medication at time of initial assessment

Normal left ventricular systolic function (n=308)		
No change	120	(39%)
Change	188	(61%)
Abnormal left ventricular systolic function (n=167)		
No change	23	(14%)
Change	144	(86%)
Medication changes made		
Initiation of ACE inhibitors	60	(42%)
Increase dose of ACE inhibitors	51	(35%)
Addition of spironolactone	20	(14%)
Addition of beta blockers	13	(9%)
Addition of warfarin in atrial fibrillation	18	(11%)

Table 3. Changes in quality of life scores (using 'Minnesota Living with Heart Failure Questionnaire')

			Average score
Initial assessment of patients with left ventricular systolic dysfunction (n=167)			37.5/100
After three months' repeat assessment:			
- improved	117	(70%)	53.6/100
- remained same	38	(23%)	
- deteriorated	12	(7%)	

Table 4. Referral data

	Normal echo	**Left ventricular systolic dysfunction**
Previous history of heart failure, or thought to have heart failure on clinical assessment (n=220)	143 (65%)	77 (35%)
Previous history of ischaemic heart disease, or other risk factors but not thought to have heart failure (n=255)	165 (64%)	90 (36%)

referrals. Table 1 summarises the initial findings and how many patients required further assessment at the District General Hospital, either due to inadequate images or further assessments. One third (33%) showed objective evidence of left ventricular systolic dysfunction, with 62% showing no evidence of systolic dysfunction. Further assessments were required on 5% of the referrals. Table 2 summarises the changes in medication in both those who had normal left ventricular systolic function and also in those who were found to have left ventricular systolic dysfunction. In those with left ventricular systolic dysfunction, 86% required an initial change in their medication: 77% required either initiation or increased dosage of ACE inhibitors, 14% were recommended aldosterone antagonists and 9% were recommended beta blockers. The initial quality of life assessment showed that 70% of those patients with left ventricular systolic dysfunction improved their scores by an average 43% after three months, with 23% remaining the same and 7% deteriorating (table 3).

The average age of patients was 74 years, with a male/female ratio of 5:3. Table 4 shows how 220 patients were thought to be in heart failure, or had been diagnosed as having had heart failure in the past, after clinical assessment. Of these, 143 had a normal echo and 77 showed left ventricular systolic dysfunction. There were 255 patients referred without the diagnosis of heart failure but having risk factors, such as known ischaemic heart disease or diabetes and hypertension. Of these, 165 were found to have a normal echo and 90 showed systolic dysfunction.

Discussion

This paper confirms previous reports that the majority of patients considered to have heart failure based on clinical features do not have any objective evidence of left ventricular systolic dysfunction. In those patients who do have left ventricular systolic dysfunction, the majority are being suboptimally managed. Poorly managed heart failure is a miserable condition with patients experiencing a poor quality of life and also a high risk of hospitalisation, often with multiple admissions over a short period of time. Getting the drug management right, initially with ACE inhibitors, as

Key messages

- The majority of patients thought to have heart failure based on clinical features alone, do not have any objective evidence of left ventricular systolic dysfunction
- The majority of patients with objective evidence of left ventricular systolic dysfunction are either not on an ACE inhibitor or an adequate dose
- The combination of accurate diagnosis, a clear management plan and follow-up by a specialist nurse significantly improves quality of life in patients with congestive heart failure
- If primary care is to remain the arena where heart failure is managed, there is scope for considerable improvement

well as lifestyle changes, patient education and specialist nurse follow-up, appears to have a significant impact on quality of life scores. Following the clinical assessment, significant initial changes were recommended and further optimisation of medication was recommended during follow-up by the nurse specialist. Stopping inappropriate medication in those with normal left ventricular systolic function not only offers benefits to patients, reducing the potential for iatrogenic disease, it also reduces costs to the Primary Care Trust.

'Improvements in the quality of life assessment support the clinical impression that patients dramatically improve on the right management'

The service has the full support and co-operation of the cardiology department at the local District General Hospital. HW, who does the scans, works one session a week in the department, where he is appraised annually by the consultant and cardiac technicians. Although the image obtained on the portable machine is inferior to that of hospital-based machines, the purpose is to visualise the left ventricle and the portable machine offers a better assessment than clinical examination alone. Assessment of left ventricular function is done by observation only although there is the potential to calculate ejection function. Diastolic dysfunction could not be detected initially due to the absence of Doppler on the original machine but an upgraded machine (Sonoheart Elite) now provides this function. We consider that the portable machine provides an adequate assessment, in our hands, of all but 5% of those referred. It should be remembered, however, that the primary healthcare teams select referrals carefully, excluding complex cases or those with valve lesions. The service has had no impact on waiting times for echocardiography at the District General Hospital. Indeed, as primary care physicians' awareness of the potential of this technique has grown, so have the referrals.

The report sent back to GPs after community echocardiography is based on clinical findings, as well as on data obtained from the echo. Technical data are interpreted into a clear management plan which is customised for each patient. The 20 minute appointment time seems adequate for the initial assessment; follow-up by the specialist nurse allows adjustments to be made and management optimised. A special patient-held booklet has been designed to help educate the patient about the condition, as well as encouraging non-pharmaceutical interventions such as cessation of smoking and weight reduction. Monitoring of weight to detect fluid retention is encouraged and patients are given clear instructions as to how to obtain advice if they are concerned. The heart failure specialist nurse works closely with the patient and their primary healthcare team, helping to ensure best practice.

The improvements in the 'Minnesota Living with Heart Failure Questionnaire' scores support the clinical impression that patients dramatically improve on the right management. Palliative care, however, for those with terminal heart failure remains poorly organised compared with cancer services, with patient's psychological and social needs often not being met.[18-20]

The use of beta blockers is low, despite convincing evidence of their benefit;[21] a joint care plan has been drawn up with representatives from both primary and secondary care locally so that the situation can be reversed. The same resistance to initiate or increase ACE inhibitors can equally be applied to beta blockers. Change is required so as to not deny patients access to this important pharmaceutical intervention. A recent report has shown low adverse side effects on initiation of beta blockers at home.[22] Many patients with left ventricular systolic dysfunction are asymptomatic and early detection and then initiation with ACE inhibitors may not only improve prognosis but reverse the disease process.[23] Interestingly, many of those who said they were not limited physically in any way, once started on ACE inhibitors admitted that their exercise tolerance had improved, calling into doubt whether indeed these patients are completely asymptomatic in the first place.

Apart from optimising the management of heart failure, an adjunct was the potential improvement in management of patients with other cardiovascular problems, such as atrial fibrillation and hypertension. An independent review, along with echo assessment, allowed risks to be quantified and war-

farin recommended in those with atrial fibrillation, as well as ACE inhibitors or angiotensin II receptor blockers for those who had left ventricular hypertrophy. The service has been well received and continues.

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