Editorials

Time for correct diagnosis and categorisation of heart failure in primary care

Heart failure (HF) affects approximately 900 000 people in the UK and is a leading cause of hospitalisation, accounting for 5% of emergency admissions.[1] Correct identification of patients with HF holds promise for ensuring that patients receive appropriate intervention and management. However, there is good evidence that this is problematic in two respects: first, with respect to correct diagnosis of the presence or absence of HF; and, second, with respect to correct categorisation of the type of HF, if HF is indeed present.

DIAGNOSIS OF THE PRESENCE OR ABSENCE OF HF

Studies have documented underdiagnosis of HF, especially among older patients presenting with dyspnoea.[2] However, others have documented overdiagnosis: an audit of 10 practices in Northwest England found that 18% of diagnoses were inappropriate and that 22% needed further evaluation.[3] Valk and colleagues, in a recent *BJGP* article, report similar findings from a Dutch expert panel review of available diagnostic information for 683 patients with a GP diagnosis of HF.[4] Although 63.5% of patients coded as having HF were found to have definite HF, the diagnosis was determined only to be 'possible' in 19.2% and 'absent' in 17.3%.

The diagnostic pathway for non-acute HF in UK primary care recommends measurement of natriuretic peptides for patients with signs and symptoms suggestive of heart failure without previous myocardial infarction, and referral for echocardiography based on results.[1] Since 2006, confirmation of HF by echocardiography or specialist assessment has been incentivised in the UK as a Quality and Outcomes Framework (QOF) indicator and is widely available through open-access services. Valk and colleagues[4] found that, among HF patients concluded to have HF, natriuretic peptide measurement or echocardiography had been performed in 97.5%, whereas among those with 'possible' HF the rate was 74.8%, and among those where HF was concluded to be absent the rate was 83.9%.

It seems reasonable, therefore, to conclude that maximising the use of natriuretic peptide estimation and echocardiography according to current guidelines would help with the accurate diagnosis of the presence of HF. Although this is probably the case, there nevertheless remain further difficulties, even where echocardiography has been performed, in categorising the type of HF correctly.

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CATEGORISATION OF HF TYPE

The 434 patients in the Valk study[4] with confirmed HF were roughly divided 50:50 into HF with reduced ejection fraction (HFrEF) and HF with preserved ejection fraction (HFpEF). In studies documenting underdiagnosis of HF, the majority of patients (76%) with unrecognised HF were found to have HFpEF.[2] HFpEF is increasing by 10% per decade relative to HFrEF, primarily due to an ageing population living with chronic disease. Risk factors for HFpEF include female sex, diabetes, higher BMI, smoking, hypertension, concentric left ventricular hypertrophy, and atrial fibrillation.[5] Although there is heterogeneity, the most common phenotype of HFpEF is an older female with hypertension and obesity.[5] Data from the US demonstrate a trend toward increasing hospitalisation for patients with HFpEF and decreasing hospitalisation for HFrEF.[6] This analysis also found rehospitalisation rates to be 29% within 60–90 days for both groups of patients. Data from the UK National HF Audit 2009–2013 documented that all-cause mortality post-hospitalisation was 38% for patients with HFrEF (median follow-up 433 days), and 44% for patients with HF with a higher ejection fraction (median follow-up 400 days).[7] These morbidity and mortality data make a compelling case for correct categorisation as well as diagnosis, especially as treatment of HFrEF and HFpEF differ (see below).

PRESENTATION AND DIAGNOSIS OF HFpEF

Patients with HFpEF typically present with exercise intolerance and other signs and symptoms of heart failure. Symptomatic patients with HFpEF may have increased natriuretic peptides, but the increase may be less than that seen in similar patients with HFrEF. Echocardiographic findings for HFpEF are less easily interpreted. Although diastolic dysfunction in HFpEF is observed by echocardiogram in two-thirds of affected patients at rest, some clinicians argue that assessment of diastolic function should be performed during exercise as this is more likely to achieve greater diagnostic accuracy. The recent 2016 European Society of Cardiology (ESC) HF guidelines now stipulate the following for diagnosis of HFpEF: clinical signs and symptoms of HF; preserved EF; elevated natriuretic peptides (in the non-acute setting, BNP >35 pg/mL or NT-proBNP >125 pg/mL); and evidence of structural heart disease (left ventricular hypertrophy or left atrial enlargement) and/or diastolic dysfunction at rest or with exercise.[8] They characterise an EF >50% as HFpEF, and an EF 40–49% as HF with a mid-range EF.

TREATMENT OF HFpEF: WHY CORRECT CATEGORISATION MATTERS

None of the specific pharmacological treatments used for HFrEF has been found to improve outcomes in patients with HFpEF.[8] Class I recommendations in the ESC guidelines are to control symptoms with diuretics and to manage comorbidities, including hypertension, because these appear to be drivers for the inflammation that lies at the root of the condition.[8]

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However, given patients' age and likely duration of conditions, tight glycaemic control may not be warranted. Greater understanding of the pathophysiology of HFpEF is helping to identify potential targets for pharmacological treatment, but these may require more precise patient phenotyping in order to identify specific groups of patients who can benefit.

Non-pharmacological approaches hold promise. A meta-analysis of randomised clinical trials of exercise training in patients with HFpEF (six trials, 276 patients) found it was safe and effective in improving cardiorespiratory fitness and quality of life.[9] A small study of 100 patients with HFpEF (mean age 67 years, 80% female, mean BMI 39 kg/m^2) found that those in the restricted-calorie diet, exercise training, or diet plus exercise arms showed improvement in fitness at 20 weeks compared with baseline and the control group. Both diet and exercise resulted in weight loss and improvement in symptoms.[10]

WHY IS A PRIMARY CARE FOCUS NEEDED?

Despite the expected prevalence of HFpEF among patients with heart failure in primary care, Read codes indicating HFpEF or diastolic heart failure are rarely used in general practice records. Using a representative set of 300 000 adults aged >18 years in the Clinical Practice Research Database (CPRD), we found 1.26% prevalence of any one of the five Read codes for HFpEF or diastolic HF among patients coded for HF. This limited identification of patients with HFpEF in primary care is unsurprising, given the lack of QOF incentives specific to HFpEF and diagnostic difficulty. Yet failure to identify and diagnose patients with HFpEF has implications both for patient care and for costs to the health system, because evidence-based conventional treatment for HFrEF is largely ineffective in HFpEF. A primary care focus, leading to more accurate categorisation of patients with heart failure, would allow patients with HFpEF to receive treatment appropriate to their form of HF and avoid wasteful, ineffective use of treatment more suited to patients with HFrEF. It would also identify a cohort of patients with HFpEF who could be recruited into studies focused on improving their management and care.

Cardiology services focus on patients with HFrEF, so in the UK the majority of patients with heart failure with preserved ejection fraction are managed in primary care. Thus, the management of HFpEF is of major concern for primary care. Patients with HF symptoms and/or signs should have their natriuretic peptides measured and, where these are elevated, progress to echocardiography. Where this shows preserved EF with diastolic dysfunction or suggestive structural abnormalities and no other reason found for their symptoms, patients could be Read-coded for HFpEF from existing practice-held data. Correct diagnosis of HF — especially of HFpEF — would allow its management against evolving evidence-based guidelines, avoid use of non-evidence-based HFrEF treatment, and offer the possibility of research to improve outcomes for an HFpEF as a hitherto under-recognised condition. Patients can only benefit from maximising the accurate diagnosis and categorisation of HF. Studies such as Valk and colleagues[4] show that we still have work to do.

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Provenance
Commissioned; externally peer reviewed.

Competing interests
The authors have declared no competiing interests.

DOI: 10.3399/bjgp16X687649

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