New challenges in heart failure

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Heart failure has received much publicity in the last five years. In all western countries, the numbers of patients admitted to hospital with heart failure is rising sharply. There is now widespread agreement about the poor prognosis, which is worse than many forms of cancer (1). Heart failure has also become, rather belatedly, a topic of considerable interest for cardiologists. As well as new drugs available, there are increasingly sophisticated procedures involving biventricular pacing and the use of defibrillators which, though costly, can significantly improve prognosis in certain patient groups (2).

For internists, however, heart failure has always been an integral part of treating an elderly population. Many chronic disorders – hypertension, diabetes, and chronic airways disease – are associated with heart failure, which needs to be treated actively alongside the presenting condition. And there are now many new treatments available, which both alleviate the symptoms of the condition and improve prognosis.

This article will touch briefly on new aspects of the diagnosis and treatment of heart failure and the challenges in implementing them to the patient's best advantage.

Diagnosis

In order to identify and treat patients with heart failure one must have a correct diagnosis. For many years the key investigation, and the one that has been used in most epidemiological studies and therapeutic trials, is the finding of impaired left ventricular function on echocardiography.

While impaired left ventricular function is undoubtedly a highly important marker of reduced prognosis and the likelihood of developing heart failure, there are some remaining uncertainties. For instance, by no means all patients with left ventricular dysfunction develop overt heart failure (with fluid retention, pulmonary oedema etc.) and amongst hospital admissions there are now several large surveys showing up to 40% of patients with overt heart failure admitted to hospital have apparently normal left ventricular systolic function (3). This is often explained by the presence of diastolic dysfunction, a subject that remains controversial even within cardiological circles.

For the internist, echocardiography is useful if available, but heart failure can often be excluded by the presence of a normal ECG and chest x-ray. Where diagnostic uncertainty remains, brain naturetic peptide (BNP) may be the answer. This peptide, like atrial naturetic peptide, is elevated in heart failure and is now readily measured in a bedside assay. Several large surveys have now shown this to be a valuable diagnostic tool in the clinical arena (4). In the emergency room, raised BNP correctly identified the highest risk group and allowed more focused therapy with improved results. The measurement of BNP is now being used in other settings and it may in due course supplant echocardiography as the gold standard for the diagnosis of heart failure. Key issues, however, remain particularly about sensitivity and specificity. As the test is extended more widely, one can reasonably expect more false positives and false negatives to appear.

In practice, the clinical diagnosis of overt heart failure is usually not difficult for most internists. Signs of fluid retention on a background of known cardiac disease, or diseases such as hypertension or diabetes, are usually an indication for therapy with diuretics and ACE inhibitors in any case. Given the poor prognosis of heart failure, it is probably best to over-diagnose rather than under-diagnose the condition and initiate appropriate therapy.

New Treatments

Following on the landmark studies with ACE inhibitors in the eighties, the nineties have seen a succession of studies with beta blockers, angiotensin receptor blockers (ARB's), spironolactone and the new BNP antagonists.

• **Beta-blockers**

Although metoprolol has been in use in Scandinavian countries for many years in patients with heart failure, its widespread use only came with further large scale studies with metoprolol, carvedilol and bisoprolol. All have shown reduced hospitalisation, improved prognosis and some improved quality of life and LV function (5).

After many years of being taught from undergraduate days that beta blockers are contra-indicated in heart failure it has taken cardiologists and internists some time to come to terms with these findings, with several studies showing considerable under-use of beta blockers in clinical practice.

• **Angiotensin receptor blockers (ARB's)**

In the ELITE1 study, losartan showed some survival benefit over captopril, but this was not substantiated in the larger ELITE2 study (6). Nevertheless, losartan was well tolerated and was not significantly inferior to captopril in this study. The VALHEFT study (7) has also shown additional benefit when valsartan is added to an ACE inhibitor in heart failure and there are a series of ongoing studies with ARB's that may well substantiate their use in this condition. In the meantime, many physicians use losartan as an alternative to ACE inhibitors when intolerance develops, especially from cough (though it must be remembered that a small proportion of patients with ACEI cough may do the same with ARB's).

• **Spironolactone**

This is an old drug given a new lease of life by the RALES study (8). This showed both symptomatic and prognostic benefit in patients with severe heart failure (class 3/4) already established on treatment with diuretics, digoxin and ACE inhibitors. There had been concern that the combination of an ACE inhibitor and spironolactone might lead to deterioration in renal function and hyperkalaemia and although close monitoring is required, most patients appeared to tolerate this combination well with few requiring discontinuation of the drug for metabolic or other reasons. It is certainly one of the easiest of the newer drug treatments to implement and is widely applicable during both hospital and ambulatory practice.

• **BNP/ANP antagonists**

The increased recognition that raised naturetic peptides are important in the pathogenesis of heart failure has led to the development of new agents, which are showing some promise. Nesiritide is now licensed in the US and available in a number of European countries and shows promise in treatment of acute pulmonary oedema (9). Its precise role in the treatment of both acute and chronic heart failure yet remains to be determined.

Implementation

At one time, patients with heart failure were treated with digoxin and diuretics with little monitoring or follow-up. Given the current armamentarium of drugs available, a much more structured approach is necessary, particularly as the newer drugs all require careful dose titration. This is the sort of situation that lends itself well to protocol-driven policies. There is an excellent example of such policies being effective from the Italian Group(10). Physicians, cardiologists and family doctors agreed protocol to implement treatment with beta-blockers and have been very successful in doing so. They recently reported that from a low baseline of 25% prescribed beta-blockers, this rose to 48% over a 12 month period. This is a model that needs to be applied elsewhere if we are to achieve all the benefits that current therapeutic advances promise.

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