The benefits of cardiac resynchronisation therapy in heart failure

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However, large-scale clinical trials have highlighted the beneficial effect of cardiac resynchronisation therapy (CRT) in the improvement of symptoms and reduction of mortality, and CRT is now recommended in the major European and American guidelines for the treatment and prevention of heart failure.(1)

Clinical trials, however, are performed in carefully selected subjects and their results are not always applicable to the general population. Large-scale registries or surveys, on the other hand, capture data from a much more heterogeneous population and are closer to everyday clinical practice (although the applicability of the sample may be a concern).

Now, the European CRT Survey, whose follow-up results are published today in the European Journal of Heart Failure, suggests that CRT does indeed reduce rates of death and re-hospitalisation among heart failure patients.(2) Indeed, at one-year follow-up most patients who had received a CRT device considered their symptoms were better than their pre-implant assessment.(3)

The survey - a joint initiative of the Heart Failure Association and European Heart Rhythm Association of the European Society of Cardiology (ESC) - gathered information on more than 2000 patients at 141 centres in 13 European countries. Its aim was to assess the effect of CRT on symptom severity, cardiovascular re-hospitalisation, and survival. The study population included subjects poorly represented in clinical trials but commonly admitted as heart failure patients - including

the very elderly, those with atrial fibrillation, and those previously treated with a pacemaker or other cardiac device.

Analysis of the survey data showed that at, one year (average) follow-up, 81% reported a self-assessed improvement in their symptoms (with 16% no change and 4% a deterioration).

The survey also found that almost 25% of the subjects had died or been re-hospitalised within the 12-month follow-up period. This poor outcome (whose rate is consistent with that found in clinical trials - was directly associated with the diagnostic severity of the heart failure, the pre-existence of atrial fibrillation (or other heart disease), and the type of resynchronisation cardiac device implanted. Patients implanted with a pacing device only (CRT-P) had higher rates of mortality than those whose device had an additional defibrillator (CRT-D).

First author Dr Nigussie Bogale from Stavanger University Hospital in Norway said: "This is the largest study reporting a difference in outcome between CRT-D and CRT-P. Most patients with an indication for CRT have also an indication for a defibrillator. So unless they have contraindicating co-morbidities, it is now our belief that these patients should be considered for CRT-D implantation."

The use of advanced CRT devices has gained increasing acceptance in recent years and they are now being implanted on a large scale as an adjunct to conventional drug treatment. Indeed, some reports have described the two types of devices (CRT-P and CRT-D) as a revolution in heart failure. One important study cited in the most recent guidelines on heart failure suggested implantation of an ICD was associated with a 23% reduction in all-cause mortality.(4)

One study reporting in 2009 found that throughout 15 European countries the number of CRT implantations increased substantially, from

46/million in 2004 to 99/million in 2008, an increase of 115%. This was mainly explained by an increase in use of CRT-D devices. One study cited by many recent guidelines (MADIT-CRT) found that CRT-D decreased the risk of heart-failure events even in relatively asymptomatic patients (with a 34% reduction in the risk of all-cause mortality or heart failure).(5) This European CRT Survey now suggests that benefits of this nature - in both symptoms and survival - can be replicated in routine everyday practice.

However, despite the benefits and the recommendations, other studies show there is still a wide gap between those who meet the criteria for CRT and those who actually have a device implanted.

More information: (1) Cardiac resynchronisation pacemakers (CRT-P) and defibrillators (CRT-D) for treating heart failure, which have evolved from conventional pacemakers, aim to correct abnormal contractions of the heart's ventricles. More than half of the mortality associated with heart failure is because of sudden cardiac death - and the most important predictor of SCD is left ventricular dysfunction, the underlying cause of heart failure. The use of CRT aims to correct dyssynchrony and prevent sudden cardiac death.

(2) Bogale N, Priori S, Cleland JGF, et al. The European CRT Survey: 1 year (9-15 months) follow-up results. Eur J Heart Fail 2011; doi:10.1093/eurjhf/hfr158

(3) The main symptoms of heart failure are breathlessness (dyspnoea), tiredness and weakness, and oedema (swelling in the legs and ankles).

(4) Moss AJ, Hall WJ, Cannom DS, et al. Cardiac-resynchronization therapy for the prevention of heart-failure events. N Engl J Med 2009; 361: 1329-1338.

(5) Van Veldhuisen DJ, Maass AH, Priori SG, et al. Implementation of device therapy (cardiac resynchronization therapy and implantable cardioverter defibrillator) for patients with heart failure in Europe: changes from 2004 to 2008. Eur J Heart Fail 2009; doi:10.1093/eurjhf/hfp149

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