Invasive treatment of patients with cardiomyopathy: CRT-ICD better than ICD alone

E.E. van der Wall

In the December issue of our journal, special attention is paid to the underlying mechanisms and various manifestations of cardiomyopathy. In particular, new pathways in the diagnosis and treatment of patients with cardiomyopathy have been addressed. Of the modern management strategies, cardiac resynchronisation therapy (CRT) has become a mainstay in the treatment of patients both with ischaemic and nonischaemic cardiomyopathies. CRT induces progressive reverse left ventricular (LV) remodelling and delays disease progression in patients with NYHA class III or IV heart failure. The question whether CRT is also beneficial in patients with NYHA class I and II was recently addressed in the MADIT-CRT trial (Multicenter Automatic Defibrillator Implantation Trial – Cardiac Resynchronization Therapy). The trial was presented by Arthur Moss (University of Rochester Medical Center, New York, USA) during the Hot Line Session III of the ESC 2009 meeting in Barcelona. Over the time course of 4.5 years, 1820 patients with ischaemic and nonischaemic cardiomyopathy in NYHA class I or II were randomised to CRT or no CRT. All patients were candidates for an ICD, had a QRS width of 0.13 sec or more, and an LV ejection fraction of 0.30 or less. Patients were randomly assigned in a 3:2 ratio to receive CRT combined with ICD (1089 patients) or an ICD alone (731 patients). The primary endpoint was all-cause mortality or heart failure event, whichever occurred first. During an average follow-up of 2.4 years, 17.2% of patients in the CRT group and 25.3% in the defibrillator group experienced a primary endpoint. The hazard ratio in favour of CRT was 0.66 (95% confidence interval, 0.52 to 0.84; $p=0.001$), with similar benefit in patients with ischaemic and nonischaemic cardiomyopathy. Superiority of CRT was driven by a 41% reduction in the risk of a first heart failure event, a finding that was evident primarily in patients with QRS of 150 ms or more. CRT was associated with significant reduction in LV volumes and improvement in LV ejection fraction; patients with CRT-ICD showed an improvement of 11% in LV ejection fraction versus 3% in the patients with ICD alone. Based on the MADIT data, it was concluded that CRT-ICD decreased the risk of heart failure events in relatively asymptomatic patients with low ejection fraction and wide QRS complex.

These findings are consistent with other trials such as the REVERSE (REsynchronization reVERses Remodeling in Systolic left vEntricular dysfunction) trial (610 patients with cardiomyopathy). The REVERSE trial demonstrated that CRT, in combination with optimal medical therapy (+/-ICD), reduced the risk for heart failure hospitalisation and improved ventricular structure and function in patients with NYHA functional class I and II. Although REVERSE did not reach statistical significance of a heart failure clinical composite response that compared only the percentage of patients worsened (primary end point), the secondary endpoints were consistent with the much larger MADIT-CRT trial results on LV remodelling and reduction in the need for heart failure hospitalisations.

To summarise, CRT is an effective therapy in improving heart failure-related manifestations in patients with an ischaemic or nonischaemic cardiomyopathy who have a reduced LV function ($EF < 0.30$ in MADIT-CRT or < 0.40 in REVERSE). Together with broad QRS complexes of > 0.12 sec (REVERSE) or > 0.13 sec (MADIT-CRT) these patients, also those in NYHA Class I or II, are eligible candidates for primary prevention ICD implantation. ■

E.E. van der Wall

Department of Cardiology, Leiden University Medical Center, Leiden, the Netherlands

E-mail: e.e.van_der_wall@lumc.nl