

Editorial

Implantable Device Prescription in 2004: A Complex Business?

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Implantable devices are now used to treat patients with congestive heart failure (CHF) with electromechanical in dyssynchrony.¹⁻⁴ The proven benefits include improvement in cardiovascular functional state such as better exercise capacity, 6 min-hallwalk distance, New York Heart Association Class and quality of life. There is also measurable structural change in reverse left ventricular (LV) remodelling.⁵ These lead to combined clinical benefit of reduced hospitalisation and possibly reduced mortality. On the other hand, patients with CHF has a high risk of concomitant arrhythmias, and sudden cardiac death is an important cause of mortality in these patients.⁶ Prophylactic implantable cardioverter defibrillator (ICD) has been shown to improve survival over best medical therapy when implanted either for primary or secondary prevention.⁷⁻⁸ Thus when a device is prescribed for any patients, one must consider these therapeutic options so that the patient can derive the maximum benefit from an optional device. Upgrading a device is not only costly, but can be difficult because of access issues and complexity of multiple leads.

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Congestive Heart Failure

In patients with a QRS >120 ms and poor ejection fraction (EF, <35%), cardiac resynchronisation therapy (CRT) is now a Class IIa indication for pacing. The main argument here is whether to use a CRT or a CRT with ICD backup (CRT-D) in the CHF population with high risk of SCD.⁹ The pros would advocate a one-off device treatment which is evidenced based⁸⁻⁹ both for ischaemic and non-ischaemic cardiomyopathy. In addition, most benefits of ICD are in patients with wide an underlying QRS complex. The antagonist would argue the relative small benefit of ICD over drug therapy (e.g. 106 vs 97 deaths in the drug vs ICD arms in MADIT 2). In addition, many CHF patients have significant co-morbidities that would limit the lifespan of these individuals, and CRT alone would give good clinical relief and reduce hospitalisation. Cost is an important issue in all countries. In patients with narrow QRS complex, underlying LV dyssynchrony may be present, and these patients may also benefit from CRT, although we do not yet have trial data.

Bradycardia Pacing

Existing studies with the exception of a proportion of patients in MUSTIC¹ do not include a group of patients with right ventricular (RV) pacing, which induces a wide QRS complex. Whether one can extrapolate existing short to intermediate term data to these patients remain controversial

particularly for patients – who are not symptomatic of heart failure. For patients with sick sinus syndrome, it may be fair to apply the current indication for CRT in these patients if concomitant LBBB and CHF are present. In patients with complete atrioventricular (AV) block, the situation is a little more complex. A LV based pacing system after AV nodal ablation gives a better acute haemodynamic results compared to RV pacing.¹⁰ There is less mitral regurgitation and better ejection fraction after LV pacing compared to RV pacing. The data also suggest similar benefit in patients with either preserved or impaired EF. These data have implication of the use of CRT rather than RV pacing after AVN ablation. There is as yet no data for idiopathic AV block. Whether one should implant a CRT device in AV block remains controversial and it is uncertain if a CRT-D should be used in those with poor EF. RV apical pacing is associated with long term impairment of LV function and regional perfusion defects, and RV septal pacing may be an alternative way to preserve LV function.¹¹

Conclusion

We are now at a crossroad when prescribing a device for a patient with combination of brady or tachyarrhythmias with poor LV function. For most patients, a single, most sophisticated device that fit all purpose is clearly appealing, but there are issues in risk of procedure, cost and complexity in programming. We clearly need data to best tailor therapy for the individual patient to minimize the need for system change, and yet medically, socially, and economically acceptable.

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