

Magnetic resonance conditional cardiac implantable electronic devices: are they the standard of care?

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Aims

Cardiac implantable electronic devices (CIEDs) are the mainstay of care in patients with life-threatening ventricular arrhythmia, severe left ventricular impairment or symptomatic pauses. Magnetic resonance imaging (MRI) is the gold standard diagnostic tool for a wide variety of conditions however, traditionally, CIEDs have been a contraindication. Recently magnetic resonance conditional (MRc) CIEDs have become available, however there are limited data on UK *de novo* implantation rates. We sought to identify the proportion of MRc CIEDs implanted within a large-volume device service in the UK.

Methods

Retrospective single-centre observational study looking at all first-implant CIEDs from August 2013 to August 2017. Patient demographics, CIED type and MRc were collected from an electronic pacing database. Devices were deemed MRc according to manufacturer recommendations.

Results

1,669 patients (71±14years, 70% male) were included. CIEDs were mostly dual chamber pacemakers (n=723 (43%)), dual chamber implantable cardioverter defibrillators (ICDs; n=336 (20%)) and biventricular ICDs (n=286 (17%)). The proportion of MRc CIEDs greatly increased from 2013–14 to 2016–17 (Table 1). Non-MRc CIEDs were primarily mixed systems, containing a combination of MRc and non-MRc parts (n=765 (81%)). The most common non-MRc part was the generator, 78% (n=599). Overall, the proportion of non-MRc CIEDs decreased dramatically from 75% (n=277) in 2013–14 to 24% (n=103) in 2016–17.

Conclusion

MRc CIEDs are increasingly the first choice in *de novo* implants and are likely to become the standard of care over the next few years. This may be in part due to the fall in cost premiums on these devices, but also recognition of the clinical importance of lifting the barrier to undergoing MRI. MRc ICDs are more common than MRc

Table 1. Summary of results

	No of MRc systems implanted 2013–14, n (%)	No of MRc systems implanted 2016–17, n (%)	% increase
Single chamber pacemaker	0	32 (60)	60
Dual chamber pacemaker	12 (7)	115 (64)	57
Biventricular pacemaker	0	0	0
Single chamber ICD	1 (100)	34 (100)	0
Dual chamber ICD	9 (15)	73 (100)	85
Biventricular ICD	3 (5)	52 (75)	70
Total	25 (7)	306 (72)	65

ICD = implantable cardioverter defibrillators; MRc = magnetic resonance conditional.

pacemakers, probably reflecting industry-led development and highlighting the need for further development of MRc pacemakers, particularly given the increased age and comorbidity of pacemaker recipients where MRI is likely to be of diagnostic and prognostic importance. ■

Conflict of interest statement

None.

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