EDITORIAL

Cardiac magnetic resonance imaging in the UK – an end to status anxiety but no room for complacency

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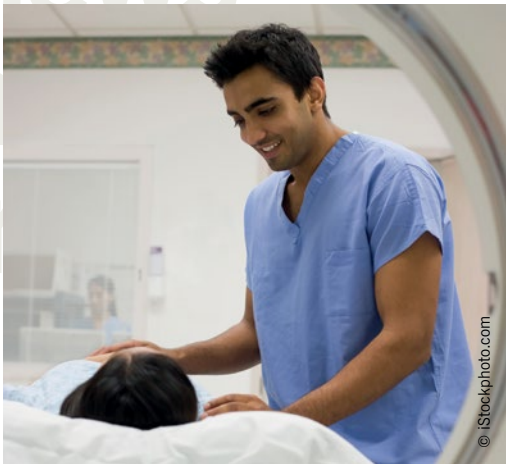
As UK cardiologists, we might be forgiven for assuming acceptance of cardiovascular magnetic resonance (CMR). The past decade has seen CMR in the UK change from an ancillary research/specialist patient populations tool to an evidence-based imaging modality for use in all spheres of cardiovascular disease. Within the wider medical community and overseas, however, the advantages of CMR remain opaque.

That CMR is the gold standard for heart size and function, and for congenital and inherited heart disease is little disputed. The additional benefit of CMR for tissue characterisation has gained widespread acceptance, particularly now with convincing prognostic data across a wide variety of disorders,[1] and the large EuroCMR registry (27,000 patients, 15 countries),[2] showing that CMR entirely changed diagnosis in nearly 10% of subjects. CMR adoption as a 'workhorse' for ischaemia and viability testing has, however, been slower, with continued calls for cost-effectiveness and head-to-head comparison data with other modalities. These data are now available,[3,4] and UK guidelines support perfusion CMR for the investigation of chest pain, but detractors point out that, despite the higher image quality and better diagnostic capabilities, little evidence of translation to better patient outcomes exists.

Growth in the UK

As Ripley *et al.* outline in their article, there has been recent substantial, and likely sustained, UK growth of CMR. Currently, there are several centres within the UK scanning some of the largest volumes worldwide – the Heart Hospital Imaging Centre in London recently scanned its 10,000th patient in the 37 months since opening. The by-product (or potentially the driver) of this is that the UK leads CMR education and training, and attracts significant numbers of international cardiologists and radiologists to train. Systems are well-codified, including attention to 'educating the referrer', as well as potential service providers,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with a well-developed network of regular regional CMR meetings such as the quarterly London CMR meeting. From a research perspective, the UK is a dominant force with five top international research centres pioneering many techniques and conducting major clinical trials. The future also looks promising – 60% of the Young Investigator finalists at Society for Cardiovascular Magnetic resonance (SCMR) and EuroCMR 2013 were UK based.

Despite these positives, the CMR community still has a way to go to divest itself of the label 'advanced imaging modality' and to be considered mainstream. CMR specialists should communicate its unique strengths (such as tissue characterisation), but acknowledge both the value of other techniques (for example echocardiography for valvular assessment) and the reducing yield if referral thresholds lower too far.

Worldwide, CMR remains a minority player for ischaemia; there are 44 single-photon emission computed tomography (SPECT) scans performed for every CMR in the USA, with a (scarcely believable) 9.5% of all insured adults having one radiation-based cardiac imaging study over a three-year period.[5] This entrenched pattern in the USA is not going to be easy to reverse because of the reimbursement streams, the nature of US

healthcare, and the perception of CMR as an expensive, specialist technique. Even within the UK, CMR funding remains potentially fragile with an evolving commissioning landscape.

Responsibility with growth

For CMR, with growth comes responsibility. Quality must be maintained; expertise cannot be 'diluted' by opening large numbers of small-volume centres. Combined, the top 12 centres perform 66% of all UK CMR scans; the bottom 28 centres only 13%. Because 15%[4] of CMR requests are for '1% diseases', such as iron overload, arrhythmogenic right ventricular cardiomyopathy (ARVC), pericardial diseases and masses, and perhaps the same again are for common diseases in rare manifestations, low-volume centres struggle to develop expertise to maintain incremental value – and trusted techniques, when they get it wrong, harm more. We would agree with Ripley *et al.* that the ideal model to fulfil projected service expansion and maintain quality may be a 'hub and spoke'. Scans of less common conditions could be either centrally verified, or referred for both scanning and reporting to ensure more specialised sequences are acquired. This should improve educational opportunities available in the smaller centres, and allow greater transparency for quality control, audit and discrepancy meetings. There is a need for workforce planning – over 10% of all current cardiology trainees aim to subspecialise in CMR imaging,[6] meaning there are more current trainees than CMR centres – a serious bubble.

Nevertheless, UK cardiology and patients benefit from UK CMR. This benefit – with nurturing – is likely to be maintained and grow. A more obvious example of the openness of the UK to innovation at all levels is hard to find and the benefits are now clear for all to see

Conflict of interest

None declared.

Editors' note

See also the article by Ripley *et al.* in this issue (pages 103–5).

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