Response to Letter Regarding Article, “Comprehensive Validation of Cardiovascular Magnetic Resonance Techniques for the Assessment of Myocardial Extracellular Volume”

We acknowledge that with 6 subjects, the power of our study to assess the significance of between-subject correlation is limited and cannot rule out an underlying significant relationship. However, the small observed value of correlation (−0.21), outwith its significance, certainly provides no evidence of a meaningful relationship between postcontrast myocardial T\(_1\) and histological collagen volume fraction. Requiring a large number of patients for a correlation to become significant is not the hallmark of a good biomarker. Indeed, we are somewhat surprised by the line of argument taken by Iles and Taylor in their letter.

There is great interest and impetus in this field and a major aim within the T\(_1\) mapping community is to develop a technology that may be able to help with not only early disease detection and better risk stratification, but eventually treatment monitoring. In keeping with this, there has been considerable recent focus on the precision and accuracy of the various sequences and methodologies applied. We fully understand the debate and potential advantages of native T\(_1\) mapping versus (dynamic-) equilibrium-based approaches, but we do not see how it can be argued that a single postcontrast myocardial T\(_1\) measurement provides information equal to the (dynamic-) equilibrium techniques. Variability in native T\(_1\), recently demonstrated across a range of pathologies, will inevitably confound isolated post-contrast myocardial T\(_1\) measurement. Indeed, given the minimal additional effort required for dynamic-equilibrium cardiovascular magnetic resonance over postcontrast measurement of myocardial T\(_1\), only, we find it hard to comprehend why one would discard the additional information and increased accuracy provided by the former.

It is not our intention to promote one technique over another but to work toward the clinical realization of a technology that can impact individual decision making. Although we agree with Iles and Taylor that across the published literature the correlation coefficients between various cardiovascular magnetic resonance–based T\(_1\)/extracellular volume assessment methods and histological collagen volume fraction are remarkably consistent, this at best argues that such technologies may be interchangeable for population science; it does not necessarily indicate that they hold promise for the goal of delivering a clinical test that will be fit for use with respect to individual decision making.

With respect to the study by Sibley et al., this work was not in the public domain at the time we submitted our article. We invite the interested reader to assess and compare the methodological strengths and weaknesses of both studies and judge for themselves.

A lot of work is still to be done before T\(_1\) mapping–based technologies, in whatever form, can enter the clinical arena. We look forward to working with pioneers such as Iles and Taylor toward achieving these goals.

Disclosures

None.

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