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EDITOR'S NOTE

Editor's choice to the November 2022 issue

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Cardiac magnetic resonance imaging: reference values and AI

Dear reader,

In this November issue, I would like to highlight two papers in the field of cardiac magnetic resonance imaging, the first one on T1 and T2 reference values and the second one on the application of Artificial Intelligence in image segmentation.

First, Dr Shaw and co-authors from the Department of Cardiovascular Radiology and Endovascular Interventions, the All India Institute of Medical Sciences in New Delhi, India established T1 and T2 reference values in an Indian population [1]. This was a prospective study in which they included 50 healthy, relatively young (average age 34 years) individuals, who underwent CMR imaging on a 1.5T scanner using a standard protocol. The authors did not find statistically significant differences between male and female individuals, but found differences in results between the two different flip angles used in the acquisition sequences (Fig. 1). One limitation of the study is that this was a single center Study and carried out on a single scanner. But it certainly gives guidance to this particular center and other centers using the same protocol and parameters. Establishing reference values in an individual institute also follows the Recommendations by the SCMR Society and is endorsed by the European Association for Cardiovascular Imaging (EACVI).

The second paper is by Dr Hatipoglu and co-authors from the Royal Brompton Hospital, Kettering Hospital and Imperial College in London, United Kingdom [2]. With the strongly increasing use of Artificial Intelligence in cardiovascular imaging, there are concerns in the community about its reliability and accuracy, while at the same recognizing the potential advantages (Fig. 2). Therefore, in this study the authors wanted to evaluate the accuracy and efficiency of AI in CMR-based left and right ventricular function analyses in a population of 300 patients.

Three different approaches were followed: (1) fully manual analyses; (2) fully AI analysis; and (3) AI with possibility by the user to edit contours. They found that the specific AI software module underestimated indexed LV volumes, LV EF and RV EF and overestimated RV volumes and LV mass index. Agreement for LV parameters was better than RV, however, all variations observed were within the range of interobserver agreements reported earlier. The savings in time were significant: manual analysis approximately 11.9 min, fully automated AI method 17 s and combined method 3–4 min. Based on a survey from 10 clinicians, visual assessment of contours and performing manual corrections where necessary appears to be a practical approach. This would address concerns raised by the participants and overcome shortcomings of the automated myocardial segmentation. This also seems very logical and intuitive, but now also documented in this interesting paper.

With this, I would like to wish you much reading pleasure with these two plus all the other papers published in this November issue of the International Journal of Cardiovascular Imaging.

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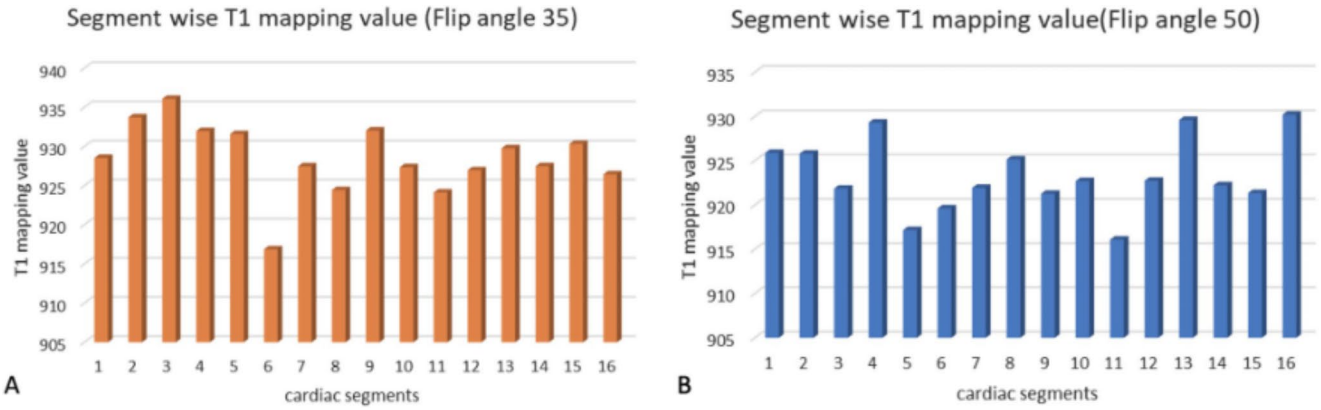

Fig. 1 Segment wise distribution of Native T1 values acquired at flip angle of 35° (A) and 50° (B)

Fig. 2 A: Word cloud on concerns about using AI in clinical practice. B: Word cloud on potential benefits of adopting the AI volumetric analysis technology

References

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