We thank Drs. Yoneyama and Akashi for their important reference to the confounding influence of respiration on biventricular volume assessment by real-time cardiac magnetic resonance imaging. As we noted in the Discussion, changes in biventricular volumes “may be caused by physiological differences in preload attributable to the fall in intrathoracic pressures during inspiration and cardiac translation through the imaging plane.” Real-time cardiac magnetic resonance imaging provides a novel means of expanding on the eloquent work of Natarajan et al. on assessing the influence of the respiratory pump on cardiac filling and function. This interaction between breathing and cardiac function has received limited attention, but now we have an excellent noninvasive tool for very accurately detailing changes in both right and left ventricular volumes with various respiratory maneuvers. We hope to provide novel data in the peer-reviewed literature soon that will detail the importance of this respiratory pump in enhancing cardiac filling.

We slightly disagree with the assertion that breath-hold imaging should be considered a gold standard. Breath-holding is a nonphysiological surrogate that has previously been necessary to enable gating of cardiac magnetic resonance images. Real-time imaging enables the investigator to apply the accuracy of cardiac magnetic resonance to real physiological settings. We can neither ignore the fact that our patients breathe nor ignore the fact that most of our patients develop symptoms with exertion. This new methodology finally enables us to accurately measure cardiac function when it really matters.

Disclosures

None.

References

Response to Letter Regarding Article, "Cardiac Magnetic Resonance Imaging: A New Gold Standard for Ventricular Volume Quantification During High-Intensity Exercise"

Andre La Gerche, Guido Claessen, Alexander Van de Brueaene, Nele Pattyn, Johan Van Cleemput, Marc Gewillig, Jan Bogaert, Steven Dymarkowski, Piet Claus and Hein Heidbuchel

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