Discussion to: Delayed Enhancement Cardiac Magnetic Resonance Imaging Detects Disease Progression in Patients with Mitral Valve Disease and Atrial Fibrillation

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Dr. Stephanie Mick (New York, NY):

Good morning and thank you for the opportunity to discuss the paper and thank you for providing it to me in advance. It's a very, very interesting paper, and I was very intrigued by the results because what your results suggest is that it's the atrial fibrosis in MR patients referred for surgery that may be the most important preoperative marker for people who will develop A-fib rather than what's conventionally thought, which is that it's the left atrial volume. So this has potentially myriad implications for our field and would help a general cardiac surgeon, for instance, understand why to do a full Cox-Maze 4 lesion set rather than pulmonary vein isolation, and I believe the ultimate goal of your work is to develop a fibrotic threshold to try to predict who will develop A-fib even in the absence of A-fib at the time of MR surgery. So, I had some questions. I mean, these are small numbers, and so statistical quantification of some of my questions is going to be difficult, but I'm curious about whether you are able to tease out any additional information about the degree of fibrosis as relates to the duration of mitral valve regurgitation and sort of similarly, the degree of fibrosis and the type of A-fib, whether paroxysmal or long-standing persistent.

Dr. Tari-Ann Yates (St. Louis, MO):

Yes. Thank you, Dr. Mick. Excellent point. So, I would like to summarize in my extra slides, as you will. Our take-home message with this study is the two of the following. We want to A, define a threshold of fibrosis as the arrhythmogenic substrate for patients with lone MR to provide some evidence for a prophylactic Maze, meaning your patient could be in the preoperative area and do not have any A-fib documented in their chart; however, if you use this DEMRI, then perhaps you would have confidence that there is a substrate that they might go into it and therefore, you should have the Maze during the mitral valve surgery. The second goal was to see that those that had A-fib, well, the distribution of fibrosis, could it guide more patients to a more specific, limited ablation set? As we know that it's very controversial in the mitral literature, what is it better to do by atrial Maze, or is it to do a left Maze or a right Maze? Well, there is no randomized controlled that has compared that, and so we're just trying to see step one, is there a substrate that can provide evidence for these type of lesion sets? But to answer your second question, thank you very much, I'd like to point out that the Utah classification with the small numbers that we do have point to the following, as you kind of pointed out. Those that were control patients had no history of surgery. They were healthy compared to the MR patients. As you can see, they had a lower class or less than 10% of their left atrium had fibrosis. But your question beneath all that was just, what about the people with A-fib? Was there any kind of correlation we saw with the small numbers between the type of A-fib and or the duration? I'd like to point out that class 3 and 4, the higher distribution of fibrosis in the left atrium, those patients often have a longer duration of A-fib, but not necessarily the type of A-
fib was a correlation. And again, we're working with very small numbers, so it's hard to tell. But if we had more enrollment, that's something that we would like to look into further.

Dr. Mick:

Great. And then I know we're short on time, but how about the right atrium? Are you looking at the degree of right atrial fibrosis in this line of work as well and sort of what would be some of the things that you're looking towards the future?

Dr. Yates:

Perfect, because that would then answer the question about full Maze, partial Maze, what to do. Well, for this particular modality, DEMRI, it has only been validated clinically for the left atrium. We are, however, provided with right atrial analysis, of which sometimes there's missing information, which is why we specifically just focus on the left atrium. But that would be very important to gather that information as well to kind of lead to some of those answers to those questions about the lesion set.

Dr. Mick:

Great. Well, this is very exciting work, and congratulations.

Dr. Yates:

Thank you.

[applause]