We thank Dr. Girdauskas for his interesting and pertinent questions on our recent publication\(^1\) and have responded to his queries below:

1. Unfortunately, our sample size of left-handed flow was very small (n=4), making meaningful comparison difficult. We did, however, observe that in these patients the flow jet seems to hit the aortic wall more left-anteriorly compared with the right-handed helical flow (which hits the wall more on the right side). This may be related to the significant angulation between LVOT and proximal aorta and in part to the aortic stenosis with a high flow jet angle observed in all 4 patients. This flow jet angle was more severe than in patients with a similar degree of aortic stenosis and a right-handed helical flow pattern. Therefore, this agrees with Dr. Girdauskas’ findings that flow abnormality is likely related most to the anatomic features and partly to the degree of aortic stenosis.

2. It is likely that flow pattern may change over time, and worsening aortic stenosis may transform a normal flow pattern into a right-handed helical flow pattern, which could then, at a later stage, turn into a complex flow pattern. Follow-up studies may show an evolution of flow over time, but this is not currently known.

3. The precise reasons are unclear, but the implication from our work is that aortic function was similar to normal controls (more detail in the Discussion section of our article). The previous study by Schaefer et al\(^2\) showing reduced aortic root distensibility with right–left cusp fusion pattern included the aortic root dilation phenotype, which is likely to be different from the (mid) ascending aortic dilation phenotype, seen most commonly with bicuspid aortic valves. That study did not show any difference in ascending aortic distensibility similar to our own.

4. Only 3 patients in our cohort had moderate to severe aortic regurgitation without concomitant aortic stenosis. All 3 patients had right–left cusp fusion pattern and showed a right-handed flow pattern with similar ascending aortic diameters and rotational flow angles but a trend towards a lower flow angle.

References


Response to Letter Regarding Article, "Aortic Dilation in Bicuspid Aortic Valve Disease: Flow Pattern Is a Major Contributor and Differs With Valve Fusion Type"

Malenka M. Bissell, Aaron T. Hess, Luca Biasiolli, Steffan J. Glaze, Margaret Loudon, Alex Pitcher, Anne Davis, Bernard Prendergast, Michael Markl, Alex J. Barker, Stefan Neubauer and Saul G. Myerson

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