

# Letter to the Editor

## In response to

*Kazui T, Izumoto H, Yoshioka K, Kawazoe K. Dynamic morphologic changes in the normal aortic annulus during systole and diastole. J Heart Valve Dis 2006;15:617-21*

We read with interest the article by Kazui T et al on the dynamic morphological changes in the normal mitral annulus (1). We wish to report the results of a similar study conducted on a larger scale in our center, which fully corroborated their findings. One hundred adult patients with a normal aortic root (mean age 58 years) underwent a transoesophageal echographic examination during which diameters of the aortic root were measured at the level of the annulus, sinuses of Valsalva, and sinotubular junction both in systole and diastole. Simultaneously, an anatomical study was performed in 112 fresh aortic homografts including sizing of the aortic root diameters using Hegar dilator. The conclusion of this work were the following:

1) The normal aortic annulus is narrower than the sinotubular junction in normal adult hearts (diameter ratio: 1.3). This had been previously reported by other echocardiography studies (2) but remained controversial because of the anatomical study by Kunzelman et al. (3) who reported the opposite. Likewise anatomical sizing of homografts in our experience have suggested that the aortic annulus is larger than the sinotubular junction. In reality, although the anatomical sizing of the annulus was reliable and almost identical to the echo data, the anatomical measurement of the sinotubular junction was flawed due to a great variability (as illustrated by the high standard deviation) and considerably underestimated the dimension of the aorta as provided by echocardiography. This error was probably linked to the vasoconstriction of the homograft wall and to the lack of any intraluminal pressure at the time of sizing.

2) Precise echocardiographic measurements using various incidences have shown that the diameters of the aortic annulus as well as those of the sinuses of Valsalva were virtually identical in systole and dias-

tole. The lack of any systolic expansibility of the aortic annulus and of the sinuses observed in this 60-year old adult population are at variance with another study by Lansac et al. completed in lambs depicting a significant expansibility of the whole aortic root (4). It is likely that the elasticity of the aorta was much greater in these growing animals (4) and might more closely mimic the dynamics of a pediatric human aortic root. Our study also confirmed that a slight diameter increase in systole can be detected at the level of the sinotubular junction and beyond, at the level of the ascending aorta.

Failure of anatomical sizing to accurately predict the physiological diameter of the aortic root beyond the annulus should probably be taken into consideration by the surgeon using intraoperative measurement on a flaccid vessel during aortic root operations. Prior echocardiographic sizing is more reliable and should be favored.

## References

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