

## Heart rate and arterial stiffness

In their recent study, Ozdogru et al. [1] concluded that the pulse wave velocity was impaired and was improved after successful percutaneous balloon valvuloplasty in patients with mitral stenosis, which reveal that mitral stenosis is a factor related to impaired arterial stiffness. However, there is an uncertainty in interpreting the results of this study.

Both structural and functional changes could affect the pulse wave velocity [2]. Among functional changes, heart rate is pretty important factors related to the pulse wave velocity. The study by Lantelme et al. [3] confirmed that heart rate had a significant relation to pulse wave velocity independent of blood pressure level. In the study by Ozdogru et al. [1], however, the baseline heart rate in mitral stenosis patients was higher than control group as stated by the authors. In addition, the changes of heart rate after successful percu-

taneous balloon valvuloplasty were not described in the study by Ozdogru et al. [1]. Are there any relations of the results of the study by Ozdogru et al. [1] to the above-mentioned baseline heart rate or the changes of heart rate after successful percutaneous balloon valvuloplasty?

**Conflict of interest:** none declared

### References

1. Ozdogru I, Celik A, Dogan A et al. Improved arterial stiffness in mitral stenosis after successful percutaneous balloon valvuloplasty. *Cardiol J*, 2012; 19: 586–590.
2. Guerin AP, Blacher J, Pannier B et al. Impact of aortic stiffness attenuation on survival of patients in end-stage renal failure. *Circulation*, 2001; 103: 987–992.
3. Lantelme P, Mestre C, Lievre M et al. Heart rate: An important confounder of pulse wave velocity assessment. *Hypertension*, 2002; 39: 1083–1087.

*Ze-Zhou Song, Chun-Jie Hou, Fan Zhang, Xiao-Ming Fan, Jian-Yi Han*

*Department of Ultrasound, Zhejiang Provincial People's Hospital, #158 Shangtang Road, Hangzhou, P.R. China, fax: +86-571- 8513-1448, e-mail: zezhou\_song@126.com*

## Authors' response

In our study the baseline heart rates were different in patients with mitral stenosis and control group as Song et al. said ( $89 \pm 11$  in patients with mitral stenosis and  $72 \pm 7$  in control group,  $p < 0.001$ ). But as we indicated in the result section '**No significant differences was found between heart rate at pulse wave velocity measure before and after percutaneous balloon valvuloplasty ( $70 \pm 6$**

**and  $69 \pm 5$ ,  $p = 0.4$ , respectively)**'. So we did not measure the pulse wave velocity values with an average of 89 bpm in mitral stenosis patients before percutaneous balloon valvuloplasty. We decreased the heart rates of mitral stenosis patients with medical agents and/or rest and measured the pulse wave velocity values to prevent the potential effects of higher heart rates on pulse wave velocity values.

*Ahmet Celik<sup>1</sup>, Ibrahim Ozdogru<sup>2</sup>*

*<sup>1</sup>Department of Cardiology, Elazig Education and Research Hospital, Elazig, Turkey  
tel: +90 531 792 79 10, fax: +90 424 212 14 61, e-mail: ahmetcelik39@hotmail.com*

*<sup>2</sup>Department of Cardiology, Erciyes University Medical Faculty, Kayseri, Turkey*