

## Is Ejection Fraction the Best Parameter for the Assessment of Ventricular Function?

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Our study group on Heart Failure has paid close attention to the potential benefits of Trimetazidine. However, it should be pointed out that Ventricular Function (VF) may be assessed by several methods, including Ejection Fraction (EF). There are situations in which EF may not be consistent with VF because of its dependence on valvular function, pre-load, post-load, HR, contractile function and use of drugs<sup>1</sup>. However, VF may

be measured by other parameters such as  $dp/dt^{2,3}$ , cardiac output, ejection volume and TAU<sup>4</sup>.

As regards the article "The Effects of Trimetazidine on Heart Rate Variability (HRV) in Patients with Heart Failure"<sup>5</sup>, recently published in ABC, we find that the major benefit of the drug found in that study, namely the improvement of left ventricular ejection fraction, was strongly influenced by variables such as HR, blood volume, and peripheral resistance, which were not controlled. Therefore, we understand that the improvement of ventricular function elicited by Trimetazidine has not been proven with the variation in ejection fraction observed in that study.

### Key words

Stroke volume/drug effects; heart failure; trimetazidina.

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### References

1. Wang J, Nagueh SF. Echocardiographic assessment of left ventricular filling pressures. *Heart Fail Clin.* 2008; 4 (1): 57-70.
2. Yilmaz H, Minareci K, Kabukcu M, Sancaktar O. Diastolic blood pressure-estimated left ventricular  $dp/dt$ . *Echocardiography.* 2002; 19 (2): 89-93.
3. Koliass TJ, Aaronson KD, Armstrong WF. Doppler-derived  $dp/dt$  and  $-dp/dt$  predict survival in congestive heart failure. *J Am Coll Cardiol.* 2000; 36 (5): 1594-9.
4. Scalia GM, Greenberg NL, McCarthy PM, Thomas JD, Vandervoort PM. Noninvasive assessment of the ventricular relaxation time constant ( $\tau$ ) in humans by Doppler echocardiography. *Circulation.* 1997; 95 (1): 151-5.
5. Gunes Y, Guntekin U, Tuncer M, Sahin M. Os efeitos da trimetazidina na variabilidade da frequência cardíaca (VFC) em pacientes com insuficiência cardíaca. *Arq Bras Cardiol.* 2009; 93 (2): 154-8.

### Author's Reply

Dear editor,

We thank the authors for their comments on our article "The Effects of Trimetazidine on Heart Rate Variability in Patients with Heart Failure"<sup>1</sup>. We agree with Rosa et al<sup>2</sup> that the measurement of left ventricular function by ejection fraction (EF) may be biased by several factors. Furthermore, heart failure is a continually progressive process and there is no means of guaranteeing the association of subjective changes in echocardiography and clinical condition with drugs or the natural course of heart failure. However, EF is the most

commonly used noninvasive way of assessment of ventricular function. In a subsequent study, we analyzed the effects of trimetazidine on ventricular functions with tissue Doppler, which is a relatively load-independent method. We found that trimetazidine added to optimal heart failure treatment improved functional status and left and right ventricular functions based on tissue Doppler velocities in patients with heart failure<sup>3</sup>. Nevertheless, large-scale multicenter placebo-controlled trials and studies using more reliable methods as stated by Rosa et al<sup>2</sup> are necessary to confirm our findings.

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## References

1. Gunes Y, Guntekin U, Tuncer M, Sahin M. The Effects of Trimetazidine on heart rate variability in patients with heart failure. *Arq Bras Cardiol* 2009; 93(2): 145-8.
2. Rosa EM, Mantesso M, Spagnol MF. Fração de ejeção é o melhor parâmetro para avaliarmos a função ventricular? *Arq Bras Cardiol*.2010 [In Press]
3. Gunes Y, Guntekin U, Tuncer M, Sahin M. Improved Left and right ventricular functions with trimetazidine in patients with heart failure: a tissue Doppler study. *Heart Vessels* 2009;24: 277-82.