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ORIGINAL ARTICLE

Right ventricular function and symptomatology in patients with isolated mitral stenosis: A Doppler tissue imaging study

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KEYWORDS

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Abstract *Objectives:* To compare RV function by DTI in symptomatic and asymptomatic patients with isolated mitral stenosis and with similar mitral valve area.
Background: Patients with MS of moderate or severe degree are not homogenous regarding symptomatology and some suffer more than others; the RV function is an important determinant of clinical symptoms. DTI is a technique that allows a quantitative assessment of myocardial function and by using this technique RV function can be assessed in MS patients of different degrees of symptomatology.
Methods: Fifty patients with isolated MS of moderate to severe degree were classified into two groups according to New York Heart Association (NYHA) class (asymptomatic group NYHA class I and symptomatic group NYHA class II–III). The RV function was evaluated by both conventional echo and Doppler tissue imaging. Pulsed wave DTI was placed at the lateral tricuspid annulus to measure the peak velocities of IVC (IVC max), S wave (S max), E', A' waves and E'/A' ratio also the duration of IVC, IVR, time to peak of IVC, S wave duration were measured then isovolumic acceleration (IVA) and Tei index were calculated.
Results: Conventional echo could not detect significant changes between the two groups, while using DTI the symptomatic group was found to show a significantly lower E' wave peak velocity ($P = 0.005$), E'/A' ratio ($P = 0.009$), S wave peak velocity ($P = 0.033$), IVC max ($P = 0.02$) and IVA ($P = 0.001$).
Conclusion: Patient with impaired RV function as detected by DTI are more symptomatic than other with better RV function and of similar MVA.

1. Introduction

The importance of right ventricular function has been underestimated in the past, especially its role as a determinant of cardiac symptoms and exercise tolerance in patients with valvular disease of the left heart.[1] Estimation of right ventricular

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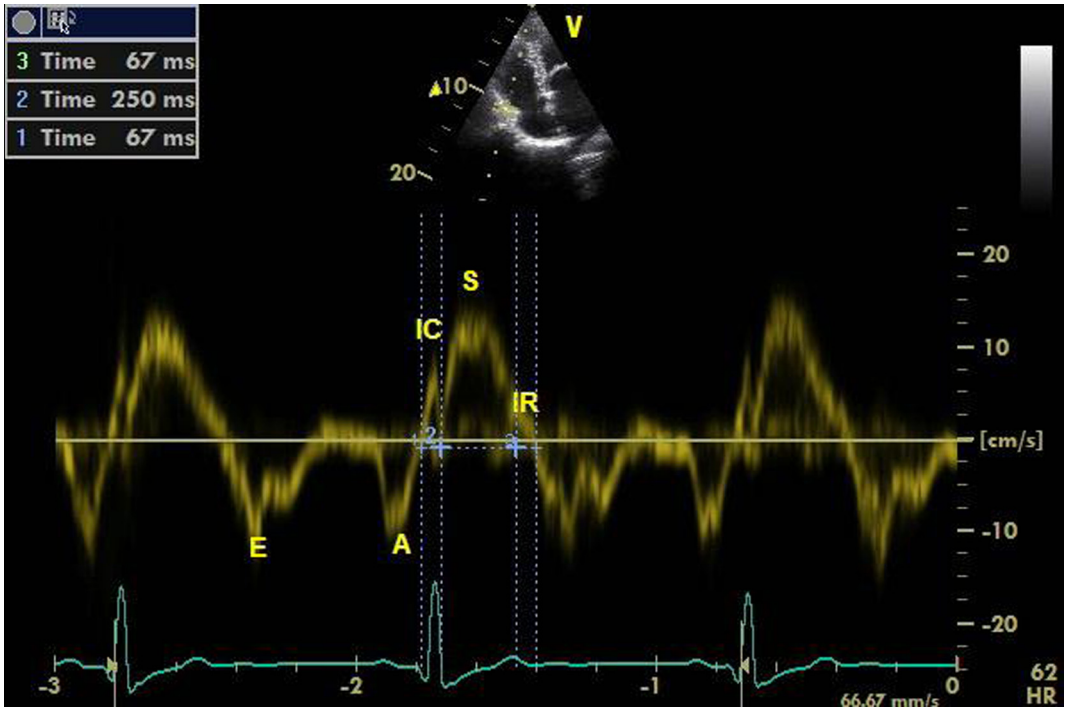

Figure 1 Recording of lateral tricuspid annular wave duration in patients with pure MS (MVA = 1.3 cm) and with NYHA II classification.

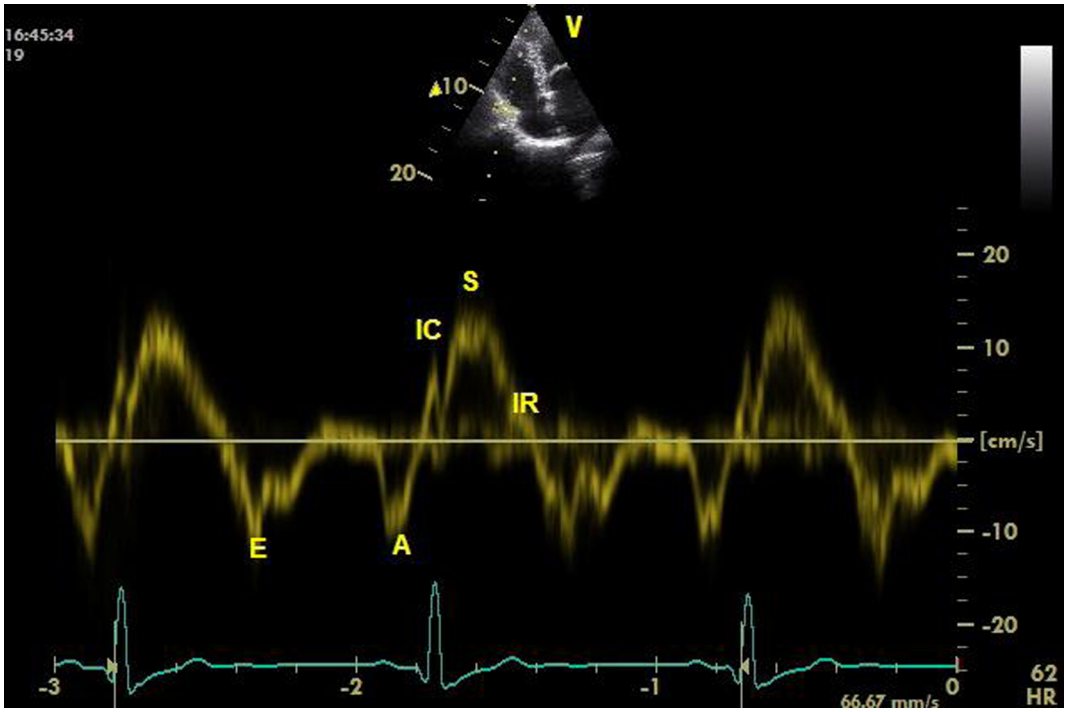

Figure 2 Recording of lateral tricuspid annular wave velocities in patients with pure MS (MVA = 1.3 cm) and with NYHA II classification.

function is helpful to predict prognosis in various clinical situations.[2] A qualitative assessment of the right ventricle is a routine part of echocardiography,[1] but visual assessment of RV function is suboptimal, and the complex shape of the right ventricle greatly complicates volume quantification and quantitative assessments such as ejection fraction and other indices that are used for the left ventricle. There are few clinically applicable quantitative methods to assess RV function and most of them depend on loading conditions.[2] Doppler myocardial imaging is a technique that offers information on myocardial