

Comparison of Pro B-natriuretic Peptide in Hypertensive Patients with and without Diastolic Dysfunction

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ABSTRACT

Aim: to evaluate whether pro BNP can be used for detection of diastolic dysfunction..

Methods: thirty nine hypertensive patients with normal systolic function, consecutively referred for echocardiography examination between October and December 2004 were recruited in the study. Diastolic dysfunction was diagnosed when echocardiographic mitral flow pattern demonstrated impaired relaxation, pseudonormalization or restrictive like patterns. NT-pro BNP levels were assessed using electrochemiluminescence Immunoassay (ECLIA) method. Unpaired t test was used to analyze the results.

Results: twelve out of thirty nine subjects had normal diastolic function. All base line characteristics, except for uric acid, were equally distributed between normal and abnormal diastolic function group. NT-pro BNP levels were nearly significantly higher in the diastolic dysfunction group ($P=0.053$).

Conclusion: NT-pro BNP levels trends to be higher in hypertensive subjects with diastolic dysfunction.

Key words: hypertension, pro B-Natriuretic peptide, diastolic dysfunction.

INTRODUCTION

Hypertensive patients may present with normal or abnormal diastolic function. The distinction between these two conditions is important because diastolic dysfunction may be associated with worse long-term survival. Hypertensive patients with abnormal left ventricular filling patterns suggestive of diastolic dysfunction may be asymptomatic but often report exertional dyspnea.^{1,2} Thus, it is very important to detect diastolic dysfunction earlier to prevent diastolic heart failure.

Diastolic dysfunction can be detected with cardiac catheterization. Because this is an invasive procedure other modalities are needed. NT-Pro B-natriuretic peptide (NT pro-BNP) is a cardiac neurohormone secreted from the ventricles in response to ventricular volume expansion and pressure overload.^{3,4} Pro BNP levels are known to be elevated in patients with symptomatic LV dysfunction and correlate to NYHA class and prognosis.⁵⁻⁹ BNP levels may also reflect diastolic dysfunction.^{10,11} This study was aimed to evaluate whether pro BNP can be used for detection of diastolic dysfunction.

METHODS

Study Population

The study was done in the Hypertensive Out patient Clinic at Hasan Sadikin Hospital, Bandung, Indonesia. A sample of 39 patients who were consecutively referred for echocardiography to evaluate LV function at the Non-invasive Cardiology Division between October and December 2004. Twenty one patients with an ejection fraction <50% or an LV end-diastolic dimension >5.5 mm were excluded.

Echocardiography

M-mode and 2D images and spectral and color flow Doppler recordings were obtained with commercially available instruments operating at 2.0 to 3.5 MHz. Two-dimensional imaging examinations were performed in the standard fashion in parasternal long- and short-axis views and apical 4- and 2-chamber views. Pulsed Doppler spectral recordings were obtained in the apical 4-chamber view from a 4x4-mm sample volume positioned at the tips of the mitral leaflets and in the right upper paraseptal pulmonary vein and adjusted to yield velocity signals of maximal amplitude. Left atrial and LV dimensions were measured from M-mode images according to standard criteria. The transmitral pulsed Doppler velocity recordings from 3 consecutive cardiac cycles were used

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