

## Hubungan Kadar Apelin dengan Disfungsi Diastol pada Penderita Gagal Jantung dengan Fraksi Ejeksi Normal

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### Abstrak

Apelin merupakan peptida yang berperan dalam mempertahankan performa jantung pada beban tekanan kronik. Penelitian ini bertujuan menilai hubungan antara kadar apelin dan disfungsi diastol pada penderita gagal jantung dengan fraksi ejeksi normal. Analisis statistik korelasi Spearman-Rank. Penelitian dilakukan di Instalasi Rawat Jalan Jantung dan Divisi Diagnostik Noninvasif Departemen Kardiologi dan Kedokteran Vaskular Rumah Sakit Dr. Hasan Sadikin Bandung periode Januari–April 2014. Hasil penelitian didapatkan 50 penderita laki-laki sebanyak 24 (48%) dan perempuan 26 (52%), usia rata-rata 58,72 (11,02) tahun, durasi hipertensi 1–30 tahun, median 5 tahun. Indeks massa tubuh rata-rata 24,13 kg/m<sup>2</sup>. Median tekanan darah sistol 130 (120–180) mmHg dan median tekanan darah diastol 90 (70–110) mmHg. Fraksi ejeksi median 65 (49–77%), pengobatan dengan *angiotensin converting enzyme inhibitor* (ACEI) sebanyak 48%, *calcium channel blocker* (CCB) 27%, beta bloker 6%, *angiotensin receptor blocker* (ARB) 3%, dan diuretik 1%. Pengukuran fungsi diastol, *tissue doppler imaging* (TDI) rata-rata 10,32, *deceleration time* rata-rata 228,2 detik, median rasio E/A (*early/atrial (late) ventricular filling velocities*) 0,77 (0,43–1,53), median *isovolumic relaxation time* (IVRT) 92 (60–177) detik. Median kadar apelin 1080,5 (993,2–1113) pg/mL. Terdapat korelasi positif antara kadar apelin dan disfungsi diastol yang dihitung dengan TDI (R=0,3445, p=0,014). Sebagai simpulan, apelin dapat digunakan untuk menilai gejala dan prognosis pada penderita gagal jantung dengan fraksi ejeksi normal karena kadarnya meningkat pada beban tekanan disertai fibrosis yang sedikit dan menurun pada beban tekanan disertai fibrosis yang luas. [MKB. 2015;47(2):96–101]

**Kata kunci:** Apelin, disfungsi diastol, fraksi ejeksi normal, gagal jantung, TDI

## Correlation between Plasma Apelin Level and Diastolic Dysfunction in Heart Failure Patients with Preserved Ejection Fraction

### Abstract

Apelin is a novel multifunction peptide implicated in cardiovascular performance regulation in chronic pressure overload. Plasma apelin level and its correlation to diastolic dysfunction in patient heart failure with preserved ejection fraction were investigated. Hypertensive patients with heart failure but without coronary artery disease, atrial fibrillation, obese, and diabetes mellitus were enrolled in this study during January–April 2014. Each patients underwent plasma apelin measurement and echocardiographic assessment of left ventricular diastolic function. Statistical analysis was conducted using Spearman Rank. Fifty patients, 24 males (48%) and 26 females (52%), met the inclusion criteria. The mean age of the participants was 58.72 (11.02) years with a duration of hypertension between 1–30 years, median 5 years. Mean body mass index was 24.13 kg/m<sup>2</sup>. Systolic blood pressure median was 130 (120–180)mmHg while the diastolic blood pressure median was 90 (70–110)mmHg. Left ventricular ejection fraction median was 65 (49–77)%, treatment with angiotensin converting enzyme inhibitor (ACEI) was 48%, calcium channel blocker (CCB) was 27%, beta blocker was 6%, angiotensin receptor blocker (ARB) was 3%, and diuretic was 1%. Diastolic function assessment with tissue doppler imaging (TDI) resulted in a mean of 10.32, deceleration time mean of 228.2, E/A (*early/atrial (late) filling velocities*) ratio median of 0.77 (0.43–1.53), and IVRT (*isovolumic relaxation time*) median of 92 (59–177). Plasma apelin measurement median was 1,080.5 (993.2–1113) pg/mL. There was a positive correlation between plasma apelin level and diastolic function (TDI) (R=0.3445, p=0.014). There was no significant correlation between plasma apelin level and diastolic function using other criteria. In conclusion, apelin can be used for assessing symptoms and prognosis of heart failure patients with preserved ejection fraction because apelin level is upregulated when pressure overload occurs with less fibrosis and down-regulated when pressure overload occurs with marked fibrosis. [MKB. 2015;47(2):96–101]

**Key words:** Apelin, diastolic dysfunction, heart failure, preserved ejection fraction

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