

# Hubungan brain natriuretic peptide dengan fungsi sistolik ventrikel kiri pada non-st elevasi infark miokard akut = Correlation between Brain Natriuretic Peptide (BNP) with left ventricular systolic fuction in acute non st-elevation myocardial infarction (nonstemi)

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## Abstrak

Pendahuluan BNP adalah asam amino peptida yang disintesa dan dilepas terutama dari miokard ventrikel sebagai respon terhadap regangan miosit. Kadar BNP dilepas juga saat iskemi maupun nekrosis miokard. Pada NonSTEMI terjadi keadaan hipoksia, iskemia, sampai nekrosis di subendokard dalam berbagai derajat gangguan sehingga perlu adanya petanda yang bisa menggambarkan gangguan fungsi ventrikel mi. Pada NonSTEMI terjadi lepasnya BNP dan terganggunya kontraktilitas miokard dalam berbagai tingkatan. Tujuan Penelitian Mencari hubungan antara besarnya kadar BNP yang keluar akibat kerusakan subendokard dihubungkan dengan gangguan fungsi ventrikel kiri yang dinilai dengan ekokardiografi.

Metode Penelitian merupakan studi deskriptif analitik yang bersifat cross sectional dilakukan di PJNHK antara bulan Nopember 2005-Juni 2006. Penelitian dilakukan pada 36 pasien NonSTEMI yang pertamakali mengalami infark tanpa ada riwayat gagal Jantung dan kelainan katup sebelumnya. Sampel darah EDTA diambil saat pasien datang di UGD kemudian diekstraksi plasmanya untuk diperiksa kadar BNP. Fungsi sistolik ventrikel kiri dinilai ekokardiografi dengan mengukur Wall Motion Score Index (WMSI) 16 segmen sistem dan ejection fraction (EF) metode Simpson. Pemeriksaan ekokardiografi dilakukan setelah melewati fase perawatan intensif.

Hasil Terdapat kenaikan kadar BNP pada subyek penelitian ( $278.71 \pm 394.60$ ) dan berbeda bermakna dengan kadar BNP populasi normal ( $20.00 \pm 23.73$ ) dengan ( $p < 0.001$ ) pada uji T-Test. Dengan uji korelasi Pearson terdapat hubungan bermakna antara BNP ( $278.71 \pm 394.60$ ) dan EF Simpson ( $51.46 \pm 10.62$ ) dengan  $p \text{ trend} = 0.024$   $r = 0.376$  maupun antara BNP ( $278.71 \pm 394.60$ ) dan WMSI ( $1.31 \pm 0.37$ ) dengan  $p \text{ trend} = 0.013$   $r = 0.411$ . Dengan uji perbedaan Chi square Tidak ada perbedaan yang bermakna kadar BNP pada kelompok sampel dengan  $EF < 40$  dan kelompok sampel dengan  $EF > 40$  ( $c > 0.05$ ). Kesimpulan Kadar BNP meningkat pada pasien NonSTEMI. Kenaikan BNP berhubungan dengan kecenderungan penurunan fungsi ventrikel kiri. Semakin tinggi kadar BNP semakin cenderung menurun fungsi ventrikel kiri.

.....Background BNP is an amino acid synthesized by myocyte in response to myocardial stretching. Myocardial ischemia and necrosis could also induce BNP production. In NonSTEMI various degrees of hypoxia, ischemia, and subendocardial necrosis occur to the myocardium and could compromise LV function. Thus a marker that could predict LV dysfunction in this setting is very much needed. Various degrees of LV dysfunction and BNP production could be observed in NonSTEMI.

The Aim of Study To investigate the relationship between BNP level induced by subendocardial damage with LV systolic function assessed by echocardiography in NonSTEMI.

Methods This is an analytical descriptive study cross sectional in design conducted in National Cardiovascular Center 1-larapan Kita between November 2005-June 2006. Subjects are 36 patients with NonSTEMI without previous history of infarction, heart failure, or valvular abnormality. EDTA blood

samples were obtained during examination in the Emergency Department then the plasma were extracted to measure BNP level LV systolic function assessed by echocardiography with 16 segments Wall Motion Score Index (WMSI) and Ejection Fraction (EF) Simpson Methode The echocardiographic evaluation was performed after the intensive care phase.

Results There was a significant increase in BNP level among study subjects ( $278.71 \pm 394.60$ ) compared to normal population ( $20.00 \pm 23.73$ ) (Ttest with  $p < 0.001$ ) Using

Pearson correlation test we observed a significant correlation between BNP level ( $278.71 \pm 394.60$ ) and LV Ejection Fraction ( $51.46 \pm 10.62$ ) with  $p$  trend = 0.024  $r = -0.376$  and also between BNP level and WMSI ( $1.31 \pm 0.37$ ) with  $p$  trend = 0.013  $r = 0.411$  We analyzed the BNP level in patients with  $EF < 40\%$  and  $EF > 40\%$  with Chi-Square Test and found no significant difference ( $p > 0.05$ )

Conclusion The BNP level was increased in patients with NonSTEMI The BNP level was correlated with tend the severity of LV systolic dysfunction The higher BNP level tend to the lower LV fuction.