

INTISARI

Hubungan Waktu *Wire Crossing* dengan Tekanan Diastolik-Akhir Ventrikel Kiri pada Pasien Infark Miokard Akut dengan Elevasi Segmen ST yang Menjalani Intervensi Koroner Perkutan Primer

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Latar Belakang: Mortalitas dan morbiditas pada infark miokard akut dipengaruhi oleh luasnya daerah infark. Semakin cepat pemulihan aliran darah arteri koroner salah satunya dengan intervensi koroner perkutan primer (IKP primer), diharapkan akan membatasi luas infark sehingga dapat memperbaiki fungsi ventrikel kiri dan harapan hidup penderita. Infark miokard akut mengakibatkan hilangnya otot kontraktile yang akan mengurangi fungsi sistolik dan juga berdampak pada fungsi diastolik. Pada tahap awal disfungsi diastolik, tekanan diastolik-akhir ventrikel kiri (TDAVK) adalah satu-satunya tekanan yang meningkat. Rasio E/e' merupakan prediktor non-invasif yang akurat terhadap peningkatan TDAVK dan memiliki korelasi positif yang kuat.

Metode: Penelitian ini merupakan penelitian observasional analitik dengan desain potong lintang. Pengambilan data dilakukan secara prospektif dengan teknik *consecutive sampling*. Subjek penelitian adalah pasien Infark Miokard Akut dengan Elevasi Segmen ST (IMA-EST) yang menjalani IKP primer di RSUP Dr. Sardjito dalam periode waktu 1 Desember 2018 – 15 Januari 2019 yang memenuhi kriteria inklusi dan eksklusi. Waktu *wire crossing* dihitung dalam satuan jam sejak mulai nyeri dada angina tipikal pertama kali hingga dilakukan *wire crossing* pada lesi di arteri terkait-infark saat prosedur IKP primer. Ekokardiografi transthorakal untuk penilaian rasio E/e' dilakukan dalam rentang waktu 2x24 jam pasca IKP primer. Analisis korelasi antara dua variabel numerik, yaitu waktu *wire crossing* dengan rasio E/e' dinilai dengan uji *Pearson*. Analisis bivariat dilakukan untuk mengetahui *confounding factors* yang mempengaruhi rasio E/e'. Nilai $p < 0,05$ dikatakan bermakna secara statistik.

Hasil: Dari total 40 subjek penelitian, didapatkan rerata waktu *wire crossing* yaitu $12,73 \pm 5,22$ jam. Adapun nilai median rasio E/e' adalah 8,36 (rentang minimum – maksimum: 4,71 – 22,00). Dari analisis korelasi didapatkan hubungan positif yang signifikan antara waktu *wire crossing* dengan rasio E/e' ($r = 0,572$ dan nilai $p < 0,001$). Dari analisis komparasi antara kelompok subjek dengan rasio E/e' ≤ 15 dan dengan rasio E/e' > 15 didapatkan perbedaan nilai rerata waktu *wire crossing* yang signifikan ($11,41 \pm 4,39$ jam vs $20,21 \pm 2,5$ jam; $p < 0,001$). Dari analisis multivariat diketahui bahwa waktu *wire crossing* merupakan variabel independen terhadap nilai rasio E/e' ($r = 0,463$; $p = 0,003$).

Simpulan: Terdapat hubungan positif yang signifikan antara waktu *wire crossing* dengan TDAVK yang dinilai secara non-invasif menggunakan parameter rasio E/e' pada pasien IMA-EST yang menjalani IKP primer. Waktu *wire crossing* merupakan variabel independen yang dapat mempengaruhi nilai rasio E/e'. Kelompok subjek dengan rasio E/e' > 15 memiliki rerata waktu *wire crossing* yang lebih lama.

Kata Kunci: IMA-EST, IKP primer, Waktu *wire crossing*, TDAVK, Rasio E/e'

ABSTRACT

Correlation between Wire Crossing Time with Left Ventricular End-Diastolic Pressure in Patients with ST Segment Elevation Myocardial Infarction Undergoing Primary Percutaneous Coronary Intervention

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Background: Mortality and morbidity in acute myocardial infarction depend on the extent of the infarct area. Rapid recovery of coronary artery blood flow with primary percutaneous coronary intervention (primary PCI) can limit the extent of infarction so that it will improve left ventricular function and patient life expectancy. Acute myocardial infarction causes loss of contractile muscle which will reduce systolic function and diastolic function. In the early stages of diastolic dysfunction, there is an increase in left ventricular end-diastolic pressure (LVEDP). The E/e' ratio is an accurate non-invasive predictor of increasing LVEDP and has a strong positive correlation.

Methods: This was an analytic observational study using cross-sectional design. Data were collected prospectively with consecutive sampling technique. The subjects were patients with ST Segment Elevation Myocardial Infarction (STEMI) who underwent primary PCI at Sardjito General Hospital in the period of December 1st, 2018 – January 15th, 2019 which fulfills inclusion and exclusion criteria. The wire crossing time is calculated from the onset of patient feels typical anginal chest pain until wire crossing is performed in the infarct-related artery lesions during the primary PCI procedure. Transthoracic echocardiography for E/e' ratio assessment is performed within a period of 2x24 hours after the primary PCI. Correlation analysis between the time of wire crossing with the E/e' ratio was assessed by the Pearson test. Bivariate analysis was conducted to determine confounding factors that affect the value of E/e ratio. The value of $p < 0.05$ was considered statistically significant.

Results: A total of 40 patients were included in this study. The average time of wire crossing was 12.73 ± 5.22 hours. The median value of the E/e ratio was 8.36 (minimum – maximum range: 4.71 - 22.00). From the correlation analysis, there was a significant positive relationship between the wire crossing time and the E/e' ratio ($r = 0.572$ and $p < 0.001$). From the comparative analysis between group with $E/e' \leq 15$ ratio and group with E/e' ratio > 15 , the difference in wire crossing time was significant (11.41 ± 4.39 hours vs. 20.21 ± 2.5 hours; $p < 0.001$). From multivariate analysis it is known that the wire crossing time is an independent variable that can affect the value of the E/e' ratio ($r = 0.463$; $p = 0.003$).

Conclusion: There is a significant positive correlation between the wire crossing time and LVEDP which was assessed non-invasively using the E/e' ratio parameter in STEMI patients who underwent primary PCI. Wire crossing time is an independent variable that can affect the value of the E/e' ratio. Subject groups with an E/e' ratio > 15 have a longer average wire crossing time.

Keywords: STEMI, Primary PCI, wire crossing time, LVEDP, E/e' ratio