Kemampuan Heart Rate Variability metode Photoplethysmografi sebagai prediktor Major Adverse Cardiac Events pada pasien sindrom koroner akut selama perawatan di ICCU Rumah Sakit Cipto Mangunkusumo = The ability of Heart Rate Variability with Photoplethysmograph method to predict Major Adverse Cardiac Events in hospitalized acute coronary syndrome patients in ICCU Cipto Mangunkusumo General Hospital

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Abstrak

[ABSTRAK
Latar Belakang: Major adverse cardiac events (MACE) merupakan komplikasi serius pada pasien pasca sindrom koroner akut (SKA) sehingga perlu suatu metode yang andal dalam memprediksi kejadiannya. Heart rate variability (HRV) yang menggambarkan ketidakseimbangan sistem otonom pasca SKA dan dapat dilakukan dengan cara yang lebih cepat, mudah, dan praktis berpotensi dapat digunakan sebagai alat stratifikasi risiko MACE.
Tujuan: Mengetahui kemampuan HRV awal perawatan yang diukur melalui metode pulse photoplethysmograph (PPG) dalam memprediksi MACE pada pasien pasca SKA yang dirawat di intensive cardiac care unit (ICCU).
Metode: Studi ini adalah studi kohort prospektif dengan subjek pasien SKA yang menjalani perawatan di ICCU. Pemeriksaan HRV dilakukan dengan metode PPG dalam 48 jam pasca diagnosis SKA dan adanya MACE dideteksi selama perawatan di ICCU. Komplikasi yang digolongkan sebagai MACE adalah kematian, aritmia fatal, gagal jantung, syok kardiogenik, re-infark, dan komplikasi mekanik. Kemampuan HRV dalam memprediksi MACE dinyatakan melalui AUC (+IK95%) dan untuk parameter yang memiliki kemampuan prediksi baik akan dihitung nilai prediksi positif (PPV) dan nilai prediksi negatif (NPV) beserta IK95% parameter tersebut.
Hasil: Sebanyak 75 subjek SKA menjalani pengukuran HRV < 48 jam pasca diagnosis dan sebanyak 18,7% di antaranya mengalami MACE. Parameter LF dengan AUC 0,697 (0,543-0,850) dan rasio LF/HF dengan AUC 0,851 (0,741-0,962) memiliki kemampuan diskriminasi MACE yang paling baik. Parameter LF pada titik potong 89,673 memiliki PPV dan NPV sebesar 13% dan 71%, sedangkan rasio LF/HF pada titik potong 1,718 sebesar 6% dan 50%.
Kesimpulan: Variabel LF dan rasio LF/HF merupakan parameter HRV yang dinilai memiliki kemampuan diskriminasi cukup baik terhadap MACE. Kedua variabel tersebut memiliki nilai prediksi negatif sehingga dapat digunakan untuk menyingkirkan kemungkinan terjadinya MACE pada mereka dengan nilai LF > 89,673 dan rasio LF/HR > 1,718.
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ABSTRACT
Introduction: Major adverse cardiac events (MACE) are serious complications needed to be predicted rapidly and accurately in acute coronary syndrome (ACS) patients. Heart rate variability (HRV), reflecting autonomic system imbalance post ACS, is currently available in quick, easy, and practical method. This

parameter has potential to be used in MACE risk stratification.
Aim: To find the ability of HRV measurement with pulse photoplethysmograph (PPG) method in predicting MACE in post ACS patients hospitalized in intensive cardiac care unit (ICCU).
Method: This study is a prospective study using ACS patients in ICCU as its subjects. Measurement of HRV by means of PPG is conducted within 48 hours post diagnosis and the incidence of MACE is identified during ICCU stay. Events classified as MACE are including death, lethal arrhytmia, heart failure, cardiogenic shock, re-infarction, and other mechanical complications. The ability of HRV in predicting MACE was listed as AUC (+95%CI) and for specific HRV parameters which had adequate capability, positive predictive value (PPV) and negative predictive value (NPV) would be calculated.
Result: HRV measurements were done in 75 ACS subjects < 48 h post-diagnosis. Among the subjects, 18,7% suffered from MACE. Measurement of LF with AUC 0,697 (0,543-0,850) and LF/HF ratio with AUC 0,851 (0,741-0,962) had the best discrimination values. The former variable had PPV and NPV of 13% and 71% in the cutoff point of 89,673, while the latter had the number of 6% and 50% in the cutoff point of 1,718, respectively.
Conclusion: LF and LF/HF ratio are the only HRV variables having adequate MACE discrimination. Both variables have better NPV so that they can be applied in reducing MACE risk in patients with LF > 89,673 and LF/HF ratio > 1,718.;Introduction: Major adverse cardiac events (MACE) are serious complications needed to be predicted rapidly and accurately in acute coronary syndrome (ACS) patients. Heart rate variability (HRV), reflecting autonomic system imbalance post ACS, is currently available in quick, easy, and practical method. This parameter has potential to be used in MACE risk stratification.

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