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## **CKMB activity and its CKMB mass as Well as Cardiac Troponin-1 in Acute Coronary Syndrome**

### **Aktivitas CKMB dan Masa CKMB Terkait Kardiak Troponin-1 Dalam Gejala Koroner Akut**

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#### **Abstract**

Coronary Heart Disease (CHD) is the leading cause of death recently, including in Indonesia which is raised to 25%. Acute Coronary Syndrome (ACS) is its common clinical manifestation. Therefore, the necessity for a sensitive as well as specific diagnostic biomarker for ACS should be addressed in discriminating the ACS patient and its related risks. The diagnostic sensitivity of characteristic electrocardiography pattern in ACS cases were reported to be variatively between 55-75%. In laboratory diagnosis, ACS markers among others are CKMB activity, CKMB mass as well as Cardiac Troponin-T and Troponin-I (cTnT and cTnI). Currently, cTnI is the gold standard. The present study is to know the analysing of the CKMB activity as well as the mass diagnostic performance in the detection of ACS in the patient presenting with chest-pain at RSDM, by using cTnI as the standard of reference. As many 30 samples, 18&minus;65 years old, were selected trough incidental sampling method from the subjects presenting with chest-pain no longer than 6 hrs before admission. The blood samples were drawn at admission and 6 hrs afterward. The CKMB activity (immunoinhibition assay), CKMB mass (ELFA) and cTnI (ELFA) measurement were performed on each sample. The analysis showed that cTnI cut-off on 0.1 µg/L (ESC/ACC 2000) was most optimal in the laboratory diagnostic of ACS compared to that of 0.01 µg/L (ESC/ACC 2007 update) and 1.0 µg/L (WHO). Using the cTnI cut-off on 0.1 µg/L, on admission (0 hr) the diagnostic efficiency of CKMB mass was 56.7% while that of CKMB activity was 60.0%. While on the serial measurement (6 hrs), the diagnostic efficiency of CKMB mass was 76.6% while that of CKMB activity was 56.7%. The results showed that by serial measurements, CKMB mass is superior than CKMB activity in the diagnosis of ACS in patient presenting with chest-pain. Further researches are necessary to elaborate the comparison elucidatively. The results of the study considered that in designing the protocol for laboratory examination should carried out in patient presenting with chest pain.

Penyakit Jantung Koroner (PJK) merupakan penyebab kematian yang semakin meningkat persentasenya, termasuk di Indonesia yang mencapai sebesar 25%. Gejala/sindrom koroner akut (SKA) merupakan manifestasi klinis utama PJK. Untuk itu diperlukan petanda diagnostik yang peka dan khas untuk memilih pasien/penderita dan kebahayaannya. Kepekaan diagnostik elektrokardiografi bagi kasus SKA dilaporkan beragam, antara 55-75%. Di bidang laboratorium, awalnya dikembangkan tolok ukur aktivitas CKMB dan CKMB mass, kemudian dikembangkan Troponin-T dan Troponin-I (cTnI) yang digunakan sebagai acuan saat ini. Penelitian ini bertujuan untuk mengetahui uji penampilan diagnostik aktivitas CKMB dan CKMB mass, dengan cTnI sebagai bakuan acuan, di penderita dengan keluhan nyeri dada akut di IGD RSDM. Sebanyak 30 sampel dari penderita berusia antara 18~65 tahun, dipilih secara *incidental sampling* konsekutif dari subjek yang datang dengan nyeri dada akut kurang dari enam (6) jam di IGD. Terhadap sampel dilakukan pengambilan darah untuk pemeriksaan aktivitas CKMB (*immunoinhibition assay*), CKMB mass (ELFA) dan cTnI (ELFA) saat datang (0 jam) dan enam (6) jam setelah datang di RS. Hasil perhitungan menunjukkan bahwa penggunaan *cut-off* cTnI 0,1 µg/L (ESC/ACC 2000), memberikan perbandingan deteksi SKA yang terbaik dibandingkan dengan *cut-off* cTnI 0,01 (ESC/ACC 2007 mutakhir) dan 1,0 µg/L (WHO). Dengan *cut-off* cTnI 0,1 µg/L tersebut, keberhasilan-gunaan diagnostik pada 0 jam menunjukkan CKMB mass sebesar 56,7% dan yang aktivitas CKMB sebesar 60,0%. Pada pengukuran serial enam (6) jam, keberhasilangunaan diagnostik CKMB mass sebesar 76,7% dan yang aktivitas CKMB sebesar 56,7%. Dari hasil olahan data, disimpulkan bahwa dengan pengukuran secara serial, CKMB mass lebih unggul daripada yang aktivitas CKMB untuk diagnosis SKA bagi penderita dengan keluhan nyeri dada. Analisis lebih jauh

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memerlukan penelitian lebih lanjut dengan jumlah sampel yang lebih besar dan mencakup subjek bukan SKA. Hasil ini dapat dipertimbangkan pada penyusunan alur pemeriksaan penderita nyeri dada akut di RSDM.

Keyword : Troponin-I, CKMB, mass, CKMB, activity, ACS,

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