

Tesis

**PERBANDINGAN HASIL *HIGH SENSITIVITY TROPONIN I*
POINT OF CARE TESTING DENGAN *IMMUNOLOGY*
ANALYZER LABORATORIUM SENTRAL PADA
SINDROM KORONER AKUT**



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PERBANDINGAN HASIL *HIGH SENSITIVITY* TROPONIN I *POINT OF CARE TESTING* DENGAN *IMMUNOLOGY* *ANALYZER* LABORATORIUM SENTRAL PADA SINDROM KORONER AKUT

ABSTRAK

Latar Belakang : Kebutuhan biomarker sensitif dan spesifik dalam mendiagnosis sindrom koroner akut (SKA) mendorong perkembangan metode *immunoassay* pemeriksaan troponin (cTn). *High sensitivity* cTn (hs-cTn) merupakan biomarker yang direkomendasikan untuk identifikasi kerusakan miokard. Metode *point of care testing* (POCT) hs-cTn dapat mengurangi *turn around times* (TAT) dalam pengambilan keputusan cepat di Instalasi Gawat Darurat (IGD). Penelitian bertujuan untuk mengetahui perbandingan hasil hs-cTn I POCT metode *Flourescence Immunoassay* (FIA) sampel *whole blood* dan plasma dengan *immunology analyzer* sampel serum metode *Enzyme-Linked Fluorescent Assay* (ELFA).

Metode : Penelitian analitik dengan rancangan potong lintang dilakukan kepada 31 pasien SKA dari IGD RS Dr. M. Djamil Padang pada bulan November 2023 – April 2024. Subjek penelitian dapat dilakukan pengambilan sampel *whole blood* EDTA. Analisis menggunakan *Passing Bablok Regression* dan *Bland and Altman Plot*.

Hasil : Median hasil pemeriksaan hs-cTn I menggunakan *immunology analyzer*, POCT *whole blood* dan plasma adalah 87,70, 90,50, dan 115,0 ng/L. Perbandingan hasil hs-cTn I *whole blood* POCT dengan *immunology analyzer* didapatkan $r=0,985$ ($p<0,001$) dan persamaan $y=0,55+0,88x$ menggunakan *Passing Bablok Regression*, rerata perbedaan dua pengukuran didapatkan 27,14 ng/L (95%CI; -115,84-170,12; $p<0,001$) dan nilai bias 8,51% (95%CI; -69,73%-86,75%) menggunakan *Bland and Altman Plot*. Perbandingan hasil hs-cTn I plasma POCT dengan *immunology analyzer* didapatkan $r=0,980$ ($p<0,001$) dan persamaan $y=0,11+0,86x$ menggunakan *Passing Bablok Regression*, rerata perbedaan dua pengukuran didapatkan 27,26 ng/L (95%CI; -140,49-195,01; $p<0,001$) dan nilai bias 10,65% (95%CI; -94,21%-115,51%) menggunakan *Bland and Altman Plot*.

Simpulan : Ditemukan perbedaan bermakna secara signifikan antara hasil hs-cTn I POCT dengan *immunology analyzer* laboratorium sentral dengan nilai bias 8,51% untuk sampel *whole blood* dan 10,65% untuk sample plasma.

Kata Kunci : Sindrom Koroner Akut, POCT, *whole blood*, *high sensitivity* troponin I.

COMPARISON OF HIGH SENSITIVITY TROPONIN I POINT OF CARE TESTING RESULTS WITH IMMUNOLOGY ANALYZER CENTRAL LABORATORY ON ACUTE CORONARY SYNDROME

ABSTRACT

Background: The need for sensitive and specific biomarkers in diagnosing acute coronary syndrome (ACS) prompted the development of the troponin (cTn) immunoassay method. High sensitivity cTn (hs-cTn) is a recommended biomarker for identifying myocardial damage. The hs-cTn point of care testing (POCT) method can reduce turn around times (TAT) in making quick decisions in the Emergency Room (IGD). The research aims to compare the results of hs-cTn I POCT using the Fluorescence Immunoassay (FIA) method for whole blood and plasma samples with the immunology analyzer for serum samples using the Enzyme-Linked Fluorescent Assay (ELFA) method.

Methods: Analytical research with a cross-sectional design was carried out on 31 ACS patients from the emergency room of Dr. Hospital. M. Djamil Padang in November 2023 – April 2024. Research subjects can have EDTA whole blood samples taken. Analysis using Passing Bablok Regression and Bland and Altman Plot.

Results: The median hs-cTn I examination results using an immunology analyzer, POCT whole blood and plasma were 87.70, 90.50, and 115.0 ng/L. Comparison of the results of hs-cTn I whole blood POCT with an immunology analyzer obtained $r=0.985$ ($p<0.001$) and the equation $y=0.55+0.88x$ using Passing Bablok Regression, the mean difference between the two measurements was 27.14 ng/L (95 %CI; -115.84-170.12; $p<0.001$) and bias value 8.51% (95%CI; -69.73%-86.75%) using Bland and Altman Plot. Comparison of the results of hs-cTn I plasma POCT with an immunology analyzer obtained $r=0.980$ ($p<0.001$) and the equation $y=0.11+0.86x$ using Passing Bablok Regression, the mean difference between the two measurements was 27.26 ng/L (95% CI; -140.49-195.01; $p<0.001$) and bias value 10.65% (95%CI; -94.21%-115.51%) using Bland and Altman Plot.

Conclusion: A significant difference was found between the results of hs-cTn I POCT and the central laboratory immunology analyzer with a bias value of 8.51% for whole blood samples and 10.65% for plasma samples.

Keywords: Acute Coronary Syndrome, POCT, whole blood, high sensitivity troponin I.