

INTISARI

VALIDASI RASIO PERUBAHAN RIGHT VENTRICLE OUTPUT TRACT VOLUME TIME INTEGRAL (RVOT VTI) DAN STROKE VOLUME VARIATION (SVV) UNTUK MEMPREDIKSI RESPON CAIRAN PADA PASIEN SEPSIS

Latar Belakang: Prediksi respons terhadap cairan merupakan bagian tak terpisahkan dari terapi cairan pada sepsis. Prediksi respon cairan secara dinamis secara non invasif kini banyak diminati, antara lain dengan pemeriksaan ekokardiografi atau dengan metode *Stroke Volume Variation* melalui *electrical cardiometry*. Alat *electrical cardiometry* relatif mahal, sedangkan ekokardiografi lebih murah, namun bergantung pada operator. Pengukuran LVOT-VTI pada ekokardiografi relatif sulit dilakukan sehingga prediksi respon dengan ekokardiografi tidak selalu mampu laksana. Beberapa penelitian menyebutkan bahwa rasio perubahan RVOT-VTI dengan *passive leg raising*, yang lebih mudah diukur, dapat pula digunakan untuk memprediksi respon terhadap terapi cairan.

Tujuan: untuk membandingkan kinerja rasio perubahan RVOT-VTI dengan PLR dan *Stroke Volume Variation* kardiometri elektrik dalam memprediksi respon pasien sepsis dewasa di instalasi rawat intensif RSUP DR. Sardjito terhadap terapi cairan.

Metode: Penelitian ini merupakan uji diagnostik dengan desain pre-post test, pada pasien sepsis yang dirawat di ICU RSUP Dr Sardjito. Nilai referensi respons cairan didapatkan dari pengukuran curah jantung dari kardiometri elektrik dengan nilai ambang 10%. Sensitivitas, spesifisitas, dan indikator kinerja diagnostik lain dari kedua metode dinilai, dan kesesuaian keduanya diuji secara statistik dengan uji korelasi *intraclass*.

Hasil: Penelitian ini melibatkan 57 subjek, dimana 20 subjek (35,08 %) merupakan perespon cairan. Nilai AUC rasio perubahan RVOT-VTI 0,95 dengan nilai cutoff optimal 15,24%. Pada nilai tersebut, rasio perubahan RVOT-VTI memiliki sensitivitas 90% dan spesifisitas 94,6%. Nilai AUC SVV 0,961 dengan nilai cutoff optimal 14,18%. Pada nilai tersebut, SVV memiliki sensitivitas 95% dan spesifisitas 97,3%. Uji Kesesuaian berdasarkan menunjukkan *Light's Kappa* 0.923 ($Z=6.37$, $p < 0.001$), dan *Krippendorff's Alpha* 0.924.

Kesimpulan: Rasio perubahan RVOT VTI dengan PLR dan SVV kardiometri elektrik menunjukkan kemampuan yang baik dalam memprediksi respons pasien sepsis terhadap terapi cairan, hasil kedua pemeriksaan tersebut cukup setara dalam hal kemampuan prediksi respons cairan.

Kata Kunci: Kardiometri Elektrik, Respons Terapi Cairan, *RVOT-VTI*, Sepsis, *SVV*.

ABSTRACT

VALIDATION OF RIGHT VENTRICLE OUTPUT TRACT VOLUME TIME INTEGRAL CHANGE RATIO AND STROKE VOLUME VARIATION IN PREDICTING FLUID RESPONSIVENESS IN SEPSIS

Background: Prediction of fluid response is an integral part of fluid therapy in sepsis. Dynamic non-invasive fluid response prediction is now in great demand, including by echocardiography examination or by the Stroke Volume Variation method through electrical cardiometry. Electrical cardiometry equipment is relatively expensive, while echocardiography is cheaper, but depends on the operator. LVOT-VTI measurement in echocardiography is relatively difficult to do so that response prediction with echocardiography is not always feasible. Several Penelitanes have stated that the ratio of RVOT-VTI changes with passive leg raising, which is easier to measure, can also be used to predict the response to fluid therapy.

Purpose: to compare the performance of the RVOT-VTI change ratio with PLR and Stroke Volume Variation electrical cardiometry in predicting the response of adult sepsis patients in the intensive care unit of Dr. Sardjito Hospital to fluid therapy.

Methods: This is a diagnostic study with a pre-post test design, in sepsis patients treated in the ICU of Dr. Sardjito Hospital. The fluid response reference value is obtained from cardiac output measurements from electrical cardiometry with a threshold value of 10%. The sensitivity, specificity, and other performance indicators of both methods were assessed, and the consistency and agreement of both were tested statistically with the intraclass correlation test.

Results: This study involved 57 subjects, of which 20 subjects (35.08%) were fluid responders. The AUC value of the RVOT-VTI change ratio was 0.95 with an optimal cutoff value of 15.24%. At this value, the RVOT-VTI change ratio had a sensitivity of 90% and a specificity of 94.6%. The AUC value of SVV was 0.961 with an optimal cutoff value of 14.18%. At this value, SVV had a sensitivity of 95% and a specificity of 97.3%. Light's Kappa coefficient of both parameters was 0.923 ($Z=6.37$, $p < 0.001$), and Krippendorff's Alpha 0.924.

Conclusion: The ratio of RVOT VTI changes to PLR and SVV electrical cardiometry showed good ability in predicting the response of sepsis patients to fluid therapy, the results of both examinations were equivalent in term of predicting fluid responsiveness.

Keywords: Electrical Cardiometry, Fluid Therapy Response, RVOT-VTI, Sepsis, SVV.