

Latar belakang: Syok septik pada anak merupakan salah satu kondisi gawat darurat dengan mortalitas tinggi, terutama di Indonesia yang masih mencapai >50%. Resusitasi cairan merupakan terapi utama, namun evaluasi responsivitas cairan sering terkendala keterbatasan alat monitoring hemodinamik. Shock Index (SI), yaitu rasio frekuensi jantung terhadap tekanan darah sistolik, berpotensi digunakan sebagai parameter klinis sederhana untuk menilai responsivitas cairan, dibandingkan dengan alat non-invasif seperti Ultrasound Cardiac Output Monitor (USCOM[®]).

Tujuan: Penelitian ini bertujuan menilai korelasi perubahan *Shock Index* sebelum dan sesudah *fluid challenge test* dalam menilai responsivitas cairan pada anak syok septik berdasarkan parameter *Stroke Volume Index* (SVI) dari USCOM[®]. Selain itu, penelitian ini juga ingin menentukan *cutoff* penurunan SI yang dapat dijadikan indikator klinis responsivitas cairan.

Metode: Penelitian ini merupakan studi observasional analitik dengan desain *cross-sectional* pada 68 pasien anak dengan syok septik di RSUP Dr. Sardjito. Subjek dilakukan *fluid challenge test* 10 ml/kgBB, kemudian SI dan parameter hemodinamik USCOM[®] diukur sebelum dan sesudah intervensi. Analisis hubungan menggunakan uji *Wilcoxon signed rank test* dan kurva ROC untuk menentukan *cutoff* diagnostik.

Hasil: Penurunan SI *setelah fluid challenge test* terbukti signifikan terhadap responsivitas cairan ($Z = -6,511$; $p < 0,001$). Analisis ROC menunjukkan nilai AUC 0,663 (95% CI 0,537–0,788; $p = 0,003$) dengan *cutoff* penurunan $SI \geq 0,71$, sensitivitas 61,7% dan spesifisitas 61,9%. Hasil uji diagnostik per kelompok usia menunjukkan variasi akurasi, dengan sensitivitas tertinggi pada kelompok usia 3–5 tahun (100%).

Kesimpulan: *Shock Index* memiliki korelasi sedang dengan responsivitas cairan berdasarkan parameter USCOM[®] pada anak dengan syok septik. Penurunan $SI \geq 0,71$ dapat digunakan sebagai indikator klinis tambahan dalam menilai responsivitas cairan, khususnya di fasilitas kesehatan dengan keterbatasan alat monitoring hemodinamik.

Kata kunci: Syok septik, anak, shock index, responsivitas cairan, USCOM[®]

ABSTRACT

Background : *Septic shock in children is a life-threatening emergency with high mortality, particularly in Indonesia where the rate remains >50%. Fluid resuscitation is the main therapy; however, the evaluation of fluid responsiveness often limited by the availability of hemodynamic monitoring devices. Shock Index (SI), defined as the ratio of heart rate to systolic blood pressure, has the potential to be used as a simple clinical parameter for assessing fluid responsiveness, compared to non-invasive tools such as the Ultrasound Cardiac Output Monitor (USCOM[®]).*

Objective: *This study aimed to evaluate the correlation between changes in shock index before and after a fluid challenge test and fluid responsiveness in pediatric septic shock patients based on the Stroke Volume Index (SVI) measured by USCOM[®]. In addition, this study sought to determine the cutoff value of SI reduction that could serve as a clinical indicator of fluid responsiveness.*

Methods: *This was an analytical observational study with a cross-sectional design involving 68 pediatric septic shock patients at Dr. Sardjito Hospital. Each subject underwent a 10 ml/kg body weight fluid challenge test, followed by measurement of SI and USCOM[®] hemodynamic parameters before and after the intervention. Data analysis was performed using the Wilcoxon signed-rank test, and ROC curve analysis was used to determine the diagnostic cutoff.*

Results: *A significant reduction in SI after the fluid challenge test was observed in relation to fluid responsiveness ($Z = -6.511$; $p < 0.001$). ROC curve analysis showed an AUC of 0.663 (95% CI 0.537–0.788; $p = 0.003$), with an optimal cutoff of SI reduction ≥ 0.71 , sensitivity of 61.7%, and specificity of 61.9%. Diagnostic results by age group revealed variations in accuracy, with the highest sensitivity in the 3–5 years' group (100%).*

Conclusion: *Shock Index demonstrated a moderate correlation with fluid responsiveness based on USCOM[®] parameters in children with septic shock. A reduction in SI ≥ 0.71 may be used as an additional clinical indicator for achieving fluid responsiveness, particularly in healthcare facilities with limited access to advanced hemodynamic monitoring.*

Keywords: *Septic shock, Children, Shock index, Fluid responsiveness, USCOM[®]*