

## HUBUNGAN KADAR TRIGLISERIDA SERUM DENGAN DERAJAT KEPARAHAN SEPSIS DI RUANG RAWAT INTENSIF RS DR. SARDJITO

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### INTISARI

**Latar belakang:** Sepsis merupakan kondisi yang ditandai dengan disregulasi respon imun terhadap infeksi, yang dapat berujung pada disfungsi organ hingga kematian. Perubahan metabolik pada sepsis menyebabkan peningkatan asam lemak dan kadar trigliserida akibat adanya peningkatan lipolisis di jaringan adiposa dan penurunan pembersihan trigliserida oleh lipoprotein lipase di hati. Asam lemak bebas dan trigliserida menjadi terakumulasi dan bersifat toksik terhadap mitokondria, memicu apoptosis dan kerusakan organ. Kadar trigliserida berhubungan dengan perjalanan sepsis, mempengaruhi derajat keparahan sepsis, namun masih menjadi perdebatan.

**Tujuan:** Mengevaluasi hubungan kadar trigliserida serum dengan derajat keparahan sepsis.

**Metode:** Penelitian observasional analitik dengan desain kasus kontrol tidak berpasangan melibatkan subjek pasien sepsis dan syok septik di ruang intensif RS Dr. Sardjito, yang memenuhi kriteria inklusi meliputi skor SOFA  $\geq 2$ , usia  $\geq 18$  tahun, data trigliserida serum dalam satu episode rawat inap sepsis tersedia. Pasien hamil dieksklusi dari penelitian ini. Uji beda variabel kategorik antara kelompok kasus (syok septik) dan kelompok kontrol (sepsis) menggunakan *Chi-Square*, sedangkan variabel kontinyu menggunakan analisis uji *Mann Whitney* dari SPSS versi 26.0. Kadar trigliserida dipresentasikan dalam median dan Q1; Q3. Analisis multivariat menggunakan regresi logistik. Nilai  $p \leq 0,05$  dianggap bermakna secara statistik.

**Hasil:** Penelitian ini melibatkan 120 subjek penelitian, yang terdiri dari 89 kelompok kasus (syok septik) dan 31 kelompok kontrol (sepsis). Kadar trigliserida  $\geq 134$  mg/dL pada pasien sepsis ditemukan lebih tinggi 6,429 kali mendapatkan syok septik dibandingkan pasien sepsis dengan kadar trigliserida  $< 134$  mg/dL (OR 6,429; 95%CI 2,395–17,254;  $p < 0,001$ ). Kadar trigliserida  $\geq 134$  mg/dL konsisten ditemukan 7,773 kali lebih tinggi mendapatkan syok septik (OR 7,773; 95%CI 2,127–28,412;  $p = 0,002$ ) setelah penyesuaian dengan variabel lainnya meliputi penyakit arteri perifer, trombosit, kreatinin, kolesterol total, HDL-c, terapi pengganti ginjal serta ada tidaknya komplikasi. Variabel lainnya ditemukan tidak berbeda signifikan secara statistik antara kelompok kasus dan kelompok kontrol.

**Simpulan:** Kadar trigliserida  $\geq 134$  mg/dL pada pasien sepsis secara signifikan ditemukan lebih tinggi 7,773 kali pada kejadian syok septik dibandingkan pasien sepsis dengan kadar trigliserida  $< 134$  mg/dL.

**Kata kunci:** Trigliserida, sepsis, syok, skor SOFA

## ASSOCIATION BETWEEN SERUM TRIGLYCERIDE LEVELS AND SEPSIS SEVERITY IN THE INTENSIVE CARE UNIT OF DR. SARDJITO HOSPITAL

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### ABSTRACT

**Background:** Sepsis is a condition characterized by dysregulation of the immune response to infection, which can lead to organ dysfunction and death. Metabolic alterations in sepsis result in increased free fatty acids and triglyceride levels due to enhanced lipolysis in adipose tissue and decreased triglyceride clearance by hepatic lipoprotein lipase. Free fatty acids and triglycerides accumulate and exert toxic effects on mitochondria, triggering apoptosis and organ damage. Triglyceride levels are associated with the clinical course of sepsis and may influence sepsis severity; however, this relationship remains controversial.

**Objective:** To evaluate the association between serum triglyceride levels and the severity of sepsis.

**Methods:** This analytical observational study employed an unmatched case-control design involving patients with sepsis and septic shock admitted to the intensive care unit of Dr. Sardjito Hospital. Inclusion criteria included a SOFA score  $\geq 2$ , age  $\geq 18$  years, and availability of serum triglyceride data during a single episode of sepsis hospitalization. Pregnant patients were excluded. Differences in categorical variables between the case group (septic shock) and control group (sepsis) were analyzed using the Chi-square test, while continuous variables were analyzed using the Mann-Whitney test with SPSS version 26.0. Triglyceride levels were presented as median and Q1-Q3. Multivariate analysis was performed using logistic regression. A p-value  $\leq 0.05$  was considered statistically significant.

**Results:** A total of 120 subjects were included, consisting of 89 cases (septic shock) and 31 controls (sepsis). Sepsis patients with triglyceride levels  $\geq 134$  mg/dL had a 6.429-fold higher risk of developing septic shock compared to those with triglyceride levels  $< 134$  mg/dL (OR 6.429; 95% CI 2.395–17.254;  $p < 0.001$ ).

**Results:** A total of 120 subjects were included, consisting of 89 cases (septic shock) and 31 controls (sepsis). Sepsis patients with triglyceride levels  $\geq 134$  mg/dL had a 6.429-fold higher risk of developing septic shock compared to those with triglyceride levels  $< 134$  mg/dL (OR 6.429; 95% CI 2.395–17.254;  $p < 0.001$ ). After adjustment for other variables, including peripheral arterial disease, platelet count, creatinine, total cholesterol, HDL-C, renal replacement therapy, and the presence of complications, serum triglyceride levels  $\geq 134$  mg/dL remained consistently associated with a 7.773-fold higher odds of septic shock (OR 7.773; 95% CI 2.127–28.412;  $p = 0.002$ ). Other variables showed no statistically significant differences between the case and control groups.

**Conclusion:** Serum triglyceride levels  $\geq 134$  mg/dL in patients with sepsis were found to be significantly associated with a 7.773-fold higher likelihood of septic shock compared with sepsis patients with triglyceride levels  $< 134$  mg/dL

**Keywords:** Triglycerides, sepsis, shock, SOFA score