

**HUBUNGAN ANTARA KADAR FERITIN DENGAN KADAR *SOLUTE*
CARRIER FAMILY 7 MEMBER SERUM DAN KADAR
MALONDIALDEHYDE SERUM PADA PASIEN TALASEMIA DEPENDEN
TRANSFUSI**

ABSTRAK

Latar Belakang : Talasemia dependen transfusi memerlukan transfusi darah rutin yang menyebabkan *overload* besi kronik, ditandai dengan peningkatan kadar feritin serum yang berperan pada stres oksidatif serta kerusakan seluler. Stres oksidatif akibat kelebihan besi memicu peroksidasi lipid disertai aktivasi jalur *ferroptosis*. SLC7A11 berperan dalam sistem antioksidan melalui transport sistin untuk sintesis *glutathione* sebagai penghambat akumulasi lipid peroksida. Produk akhir peroksidasi lipid ditandai dengan pembentukan MDA sebagai penanda derajat kerusakan oksidatif.

Tujuan : Membuktikan hubungan antara kadar feritin dengan kadar SLC7A11 serum dan kadar MDA serum pada pasien talasemia dependen transfusi.

Metode : Penelitian observasional analitik *cross-sectional* dilakukan terhadap 49 pasien talasemia dependen transfusi yang memenuhi kriteria inklusi di RSUP Dr. Kariadi Semarang. Sampel darah diambil untuk pemeriksaan Feritin, SLC7A11 dan MDA. Analisa data uji hubungan feritin dengan SLC7A11 dengan Uji *Spearman*. Analisa data uji hubungan feritin terhadap MDA menggunakan Uji *Pearson*.

Hasil : Terdapat hubungan bermakna antara kadar feritin dan kadar SLC7A11 serum $p = 0,001$, $r = -0,449$, nilai median 124,21 (16,23 - 352,9) ng/L. Terdapat hubungan bermakna antara kadar feritin dan kadar *Malondialdehyde* serum $p = 0,029$, $r = 0,312$, rerata $486,43 \pm 91,76$ ng/mL.

Kesimpulan : Terdapat hubungan negatif sedang antara kadar feritin dengan kadar SLC7A11 pada pasien talasemia dependen transfusi. Terdapat hubungan positif lemah antara kadar feritin dengan kadar MDA pada pasien talasemia dependen transfusi.

Kata Kunci : Talasemia dependen transfusi, SLC7A11, MDA

***THE CORRELATION BETWEEN SERUM FERRITIN LEVELS AND SERUM
SOLUTE CARRIER FAMILY 7 MEMBER 11 LEVELS AND SERUM
MALONDIALDEHYDE LEVELS IN TRANSFUSION-DEPENDENT
THALASSEMIA PATIENTS***

ABSTRACT

Background: Transfusion-dependent thalassemia requires regular blood transfusions, leading to chronic iron overload characterized by elevated serum ferritin levels that contribute to oxidative stress and cellular damage. Oxidative stress resulting from iron excess induces lipid peroxidation accompanied by activation of the ferroptosis pathway. SLC7A11 plays a role in the antioxidant system through cystine transport for glutathione synthesis, functioning to inhibit the accumulation of lipid peroxides. The end product of lipid peroxidation is indicated by the formation of MDA, which serves as a marker of the degree of oxidative damage.

Objective: To evaluate the correlation between serum ferritin levels and serum SLC7A11 and MDA levels in patients with transfusion-dependent thalassemia.

Methods: An observational analytic cross-sectional study was conducted in 49 patients with transfusion-dependent thalassemia who met the inclusion criteria at Dr. Kariadi Hospital, Semarang. Blood samples were collected for measurement of serum ferritin, SLC7A11, and MDA levels. The correlation between serum ferritin and SLC7A11 levels was analyzed using Spearman's correlation test, while the association between serum ferritin and MDA levels was analyzed using Pearson's correlation test.

Results: There is a significant correlation between serum ferritin and SLC7A11 levels ($p = 0.001$, $r = -0.449$), with a median value of 124.21 (16.23 - 352.9) ng/L. There is also a significant correlation between serum ferritin and malondialdehyde levels ($p = 0.029$, $r = 0.312$), with a mean of 486.43 ± 91.76 ng/mL.

Conclusion: There is a moderate negative correlation between ferritin levels and SLC7A11 levels in transfusion-dependent thalassemia patients. Additionally, a weak positive correlation is observed between ferritin levels and MDA levels in transfusion-dependent thalassemia patients.

Keywords: Transfusion-dependent thalassemia, SLC7A11, malondialdehyde