

# **KADAR MALONDIALDEHYDE (MDA) DAN FERITIN SERUM SEBAGAI FAKTOR RISIKO KEJADIAN DISFUNGSI GINJAL**

## **Studi Pada Pasien Talasemia- $\beta$ Mayor Anak Multitransfusi Yang Mendapatkan Terapi Kelasi Besi**

### **ABSTRAK**

**Latar belakang:** Disfungsi ginjal pada talasemia- $\beta$  mayor dapat terkait dengan anemia kronis, iron overload, serta stres oksidatif. Malondialdehyde (MDA), sebagai petanda stres oksidatif, dan feritin serum sebagai petanda iron overload, memiliki peran signifikan dalam menggambarkan fungsi ginjal. Penelitian ini bertujuan menilai kadar MDA dan feritin serum sebagai faktor risiko kejadian disfungsi ginjal pada pasien talasemia- $\beta$  mayor anak multitransfusi yang mendapatkan terapi kelasi besi

**Metode:** Penelitian cross-sectional terhadap 80 pasien talasemia- $\beta$  mayor anak usia 6 – 17 tahun, mendapat transfusi darah >20 kali per tahun, dan terapi kelasi besi >1 tahun di RSUP dr. Kariadi Semarang, Juli - September 2024. Sampel darah digunakan untuk memeriksa kadar MDA, feritin dan kreatinin serum. Subjek dikelompokan berdasarkan disfungsi ginjal yang dihitung dengan eGFR formula Schwartz yang dimodifikasi. Nilai  $p < 0,05$  dianggap bermakna.

**Hasil:** Sebanyak 63 subjek penelitian (78,8%) memiliki disfungsi ginjal. Kadar MDA  $\geq 384$  ng/mL (RP 3,38; 95% CI 1,72-6,66;  $p < 0,001$ ) dan feritin serum  $\geq 2500$  ng/mL (RP 1,31; 95% CI (1,04-1,66);  $p = 0,038$ ) secara signifikan meningkatkan risiko terjadinya disfungsi ginjal.

**Simpulan:** Kadar MDA  $\geq 384$  ng/mL dan feritin serum  $\geq 2500$  ng/mL pada pasien talasemia- $\beta$  mayor anak multitransfusi yang mendapatkan terapi kelasi besi berisiko terjadi disfungsi ginjal.

**Kata Kunci:** talasemia, malondialdehyde, feritin, transfusi, kelasi besi

# SERUM MALONDIALDEHYDE (MDA) AND FERRITIN LEVELS AS RISK FACTORS FOR KIDNEY DYSFUNCTION

## A Study on Children With Transfusion-Dependent Thalassemia- $\beta$ Major Undergoing Iron Chelation Therapy.

### ABSTRACT

**Background:** Kidney dysfunction in thalassemia- $\beta$  major is associated with chronic anemia, iron overload, and oxidative stress. Malondialdehyde (MDA), as an oxidative stress marker, and serum ferritin as iron overload indicator, play a significant role in reflecting kidney function. The aim of this study is to determine MDA and serum ferritin as risk factors for kidney dysfunction in children with transfusion-dependent thalassemia- $\beta$  major undergoing iron chelation therapy.

**Methods:** A cross-sectional study involved 80 pediatric patients with thalassemia- $\beta$  major who had received >20 times blood transfusions per year and iron chelation therapy > 1 year at Dr. Kariadi Semarang Hospital, from July - September 2024. Blood samples were collected to assess MDA and serum ferritin levels. Subjects were grouped based on kidney dysfunction, calculated using estimated glomerular filtration rate based on creatinine levels. A p-value <0.05 was considered significant.

**Results** 63 patients (78.8%) had kidney dysfunction. MDA levels  $\geq 384$  ng/mL (RR 3.38; 95% CI 1.72–6.66;  $p < 0.001$ ) and serum ferritin levels  $\geq 2500$  ng/mL (RR 1.31; 95% CI 1.04–1.66;  $p = 0.038$ ) significantly increased the risk of kidney dysfunction.

**Conclusion:** MDA levels  $\geq 384$  ng/mL and serum ferritin levels  $\geq 2500$  ng/mL pose a risk of kidney dysfunction in children with transfusion-dependent thalassemia- $\beta$  major undergoing iron chelation therapy.

**Keywords:** thalassemia, malondialdehyde, ferritin, transfusion, iron chelation