

**ABSTRAK**

**Hubungan Kadar Serum Feritin Dengan Densitas Mineral Tulang Pada Pasien  
Thalasemia Tergantung Transfusi**

Irawan Sulistyono, Ugroseno Yudho Bintoro, Ami Ashariati, Rosy Setiawati

**Latar belakang:** Penderita thalasemia tergantung transfusi akan menjalani transfusi darah rutin dalam kehidupannya. Kelebihan zat besi yang terjadi pada thalasemia dapat mengalami penumpukan besi pada jaringan parenkim yang dimulai dalam 1 tahun sejak mulai transfusi rutin. Penyimpanan zat besi di dalam tubuh ada terutama dalam bentuk feritin. Penurunan densitas mineral tulang yang menyebabkan osteopenia dan osteoporosis pada pasien thalasemia tergantung transfusi. Beberapa studi menunjukkan peningkatan kadar serum feritin yang tinggi dikaitkan dengan penurunan densitas mineral tulang pada penderita thalasemia tergantung transfusi. Belum banyak penelitian di Indonesia yang mempelajari tentang hubungan kadar serum feritin dengan densitas mineral tulang, sehingga kami melakukan penelitian ini.

**Tujuan:** Menganalisis hubungan kadar serum feritin dengan densitas mineral tulang pada pasien thalasemia tergantung transfusi.

**Material dan Metode:** Penelitian analitik observasional *cross-sectional*, dilakukan di RSUD Dr. Soetomo Surabaya, melibatkan seluruh pasien thalasemia tergantung transfusi yang memenuhi kriteria inklusi dan eksklusi selama bulan Oktober - Desember 2019 secara *consecutive sample*. Sejumlah 30 pasien memenuhi kriteria inklusi dan eksklusi menjadi subjek penelitian dan diukur densitas mineral tulang. Pemeriksaan kadar serum feritin dilakukan pada awal pemeriksaan. Analisis data menggunakan uji korelasi Spearman dan dianggap bermakna jika  $p < 0,05$ .

**Hasil:** Rata-rata usia didapatkan  $23 \pm 2$  tahun, didominasi laki-laki sebanyak (60%). Didapatkan rerata kadar serum feritin  $4821,2 \pm 2788$  ng/mL. Sebagian besar pasien terdapat penurunan densitas mineral tulang lumbal sebanyak 19 (63%) sedangkan pada femur 1 (3%) dengan rerata Z-score -2,63 dan -0,747. Didapatkan hubungan yang bermakna dengan kekuatan korelasi lemah antara kadar serum feritin dengan densitas mineral tulang lumbal dengan nilai  $r = -0,363$  ( $p = 0,048$ ), namun tidak terdapat korelasi pada femur ( $p = 0,140$ ).

**Kesimpulan:** Terdapat hubungan negatif yang bermakna dengan kekuatan korelasi lemah antara kadar ferritin serum dengan densitas mineral tulang lumbal, namun tidak terdapat pada femur pada pasien thalasemia tergantung transfusi.

**Kata kunci:** Serum Feritin, Densitas Mineral Tulang, Thalasemia Tergantung Transfusi

## ABSTRACT

***Correlation Between Ferritin Serum Level and Bone Mineral Density on Thalassemia Transfusion Dependent patient***

*Irawan Sulistyono, Ugroseno Yudho Bintoro, Ami Ashariati, Rosy Setiawati*

**Background:** *Patients with thalassemia transfusion dependent will undergo routine blood transfusions in their lives. Excess iron that occurs in thalassemia can experience iron buildup in the parenchymal tissue that begins within 1 year of starting routine transfusion. Storage of iron in the body is mainly in the form of ferritin. Decreased bone mineral density that causes osteopenia and osteoporosis in patients with thalassemia transfusion dependent. Several studies have shown that elevated ferritin serum levels are associated with decreased bone mineral density in thalassemia transfusion-dependent patients. Not many studies in Indonesia have studied the relationship of ferritin serum levels to bone mineral density, so we conducted this study.*

**Objective:** *To analyzing the correlation of ferritin serum levels with bone mineral density in patients with thalassemia transfusion dependent.*

**Material and Methods:** *Observasional cross-sectional study, conducted at Dr. Soetomo Surabaya, involving all thalassemia transfusion dependent patients who met the inclusion and exclusion criteria during October - December 2019 by consecutive sample. A total of 30 patients fulfilling the inclusion and exclusion criteria were the subjects of the study and measured bone mineral density. Ferritin serum level examination is done at the beginning of the examination. Data analysis used the Spearman correlation test and was considered significant if  $p < 0.05$ .*

**Results:** *The average age is  $23 \pm 2$  years, dominated by men (60%). The mean ferritin serum level was  $4821.2 \pm 2788$  ng / mL. Most of the patients has below expected range bone mineral density lumbal 19 (63%) and femur 1 (3%) with a mean Z-score of -2.63 and -0,747. A significant relationship was obtained with the strength of a weak correlation between ferritin serum levels in lumbal bone mineral density with a value of  $r = -0,363$  ( $p = 0.048$ ), but there was no correlation in the femur ( $p = 0,140$ ).*

**Conclusion:** *There is a significant negative relationship with the strength of a weak correlation between ferritin serum levels and bone mineral density lumbal, but not femur in thalassemia transfusion dependent patients.*

**Keywords:** *Ferritin serum, Bone Mineral Density, Thalassemia Transfusion-Dependent*