

# Korelasi antara muatan besi berlebih darah dan hati dengan elastografi hati pada pasien thalasemia intermedia dewasa yang mendapatkan transfusi darah = Correlation of serum ferritin and liver iron concentration with transient liver elastography in adult thalassemia intermedia patient with blood transfusion

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## Abstrak

### <b>ABSTRAK</b><br>

Latar Belakang: Muatan besi berlebih akibat transfusi darah dan peningkatan serapan besi di saluran cerna, masih merupakan isu penting pada Thalasemia Intermedia TI, dan dikaitkan dengan berbagai komplikasi yang meningkatkan morbiditas dan mortalitas. Pemeriksaan MRI T2 hati sebagai pemeriksaan yang tervalidasi dalam menilai Liver Iron Concentration LIC, merupakan pemeriksaan yang mahal dan tidak tersedia secara merata di Indonesia. Tujuan: Mengetahui gambaran muatan besi berlebih darah dan hati pada pasien thalasemia intermedia dewasa dan korelasi antara saturasi transferin, feritin serum, MRI T2 hati, dan LIC yang dinilai dengan pemeriksaan MRI T2 hati dengan nilai elastografi hati. Metode: Penelitian potong lintang pada pasien thalasemia intermedia dewasa dengan transfusi darah dan dengan atau tanpa kelasi besi di RSUPNCM dr. Cipto Mangunkusumo mulai dari bulan Agustus sampai dengan Oktober 2016, dengan total subyek penelitian sebanyak 45 orang. Dilakukan pemeriksaan saturasi transferin, feritin serum, elastografi hati, dan MRI T2 hati. Analisis statistik menggunakan uji korelasi Pearson dan Spearman. Hasil: Sebanyak 64,4 subyek penelitian adalah Thalasemia  $\alpha$ -Hb E, dengan median RIK umur 33,22 tahun. Sebanyak 84,4 subyek penelitian mendapatkan transfusi darah secara reguler. Seluruh subyek penelitian mengalami komplikasi hemosiderosis hati melalui pemeriksaan MRI T2 hati. Sebanyak 48,9 mengalami hemosiderosis hati berat, dengan nilai median MRI T2 hati 1,6 ms. rerata feritin serum adalah 2831,1828 ng/mL, dengan nilai median saturasi transferin 66. Nilai rerata LIC melalui pemeriksaan MRI T2 adalah 15,367,37 mg besi/gr berat kering hati dan nilai rerata elastografi hati adalah 7,73,8 Kpa. Uji korelasi didapatkan terdapat korelasi nilai elastografi hati dan rerata feritin serum  $r = 0,651$ ;  $p = 0,000$ , nilai elastografi hati dan LIC  $r = 0,433$ ;  $p = 0,003$  dan korelasi negatif nilai elastografi hati dan MRI T2 hati  $r = -0,357$ ;  $p = 0,016$ . Simpulan: Terdapat korelasi antara muatan besi berlebih feritin serum dan LIC dengan nilai elastografi hati. Terdapat korelasi negatif nilai elastografi hati dengan MRI T2 hati pada pasien thalasemia intermedia dewasa.

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### <b>ABSTRACT</b><br>

Background Iron overload is a common feature of thalassemia intermedia due to regular blood transfusion and increase gastrointestinal iron absorption. Early detection and adequate iron chelator can significantly decrease related morbidities and mortality due to complication from iron overload. Liver Iron Concentration LIC is the best way to measure body iron stores. MRI T2 as a validated test to identify LIC, is expensive and currently not available in all medical services in Indonesia. Objective To identify liver iron overload and correlation of transferrin saturation, serum ferritin, liver MRI T2, and LIC with transient liver elastography in adult thalassemia intermedia patient. Methods We conducted a cross sectional study enrolling 45 patients

with thalassemia intermedia with blood transfusion and with and without iron chelator therapy. The study was conducted at Cipto Mangunkusumo Hospital from August 2016 through October 2016. We performed measurements of transferrin saturation, serum ferritin level, transient liver elastography and liver MRI T2 . The Pearson and Spearman correlation test were used to evaluate the correlation transient liver elastography with transferrin saturation, serum ferritin, Liver MRI T2 , and LIC. Results As much as 64,4 of study subject are Hb E Thalasemia Intermedia with median IQR age is 33 22 years old. As much as 84,4 of study subject have regular blood transfusion. On the basis of liver MRI T2 , all studi subject suffered from liver iron overload, with 48,9 had severe liver iron overload. The median value of Liver MRI T2 was 1,6 ms. The mean serum ferritin was 2831 1828 ng mL, with median value of transferrin saturation was 66 . The mean of LIC corresponding to Liver MRI T2 and mean liver stiffness measurement was 15,36 7,37 mg Fe gr dry weight and 7,7 3,8 Kpa respectively. Liver Stiffness correlated with serum ferritin  $r$  0,651  $p$  0,000 , Liver MRI T2  $r$  0,357  $p$  0,016 , and LIC  $r$  0,433  $p$  0,003 . No correlation was found between liver elastography and transferrin saturation  $r$  0,204  $p$  0,178 . Conclusions Serum ferritin, Liver MRI T2 , and LIC correlated with liver elastography. No correlation was found between transferin saturation and liver elastography.