Study of relationship between serum ferritin and hemoglobin level by MRI T2 of heart and liver in beta-thalassemia intermedia and major patients

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Introduction

Thalassemia major is one of the most common hereditary disorders that cause ineffective hematopoiesis in the body through disarrangement of the hemoglobin synthesis balance. Continuous blood obtainment causes complications of iron overload in the body in these patients. Assessment of tissue iron status is conducted by measurement of serum ferritin, liver biopsy and T2 MRI. The goal of this study is to assess the relationship between serum ferritin and hemoglobin by MRI T2* of heart and liver.

Method

This cross-sectional descriptive study was carried out on beta-thalassemia intermedia and major patients who had visited the Center for Thalassemia and Hemoglobinopathies at Shafa Hospital, Ahwaz between 2014 and 2015. All patients receiving regular blood were between 2 to 4 weeks. The results were analyzed by SPSS software by Pearson Correlation Test after evaluation of serum ferritin and T2* MRI of the heart and liver.

Results

A total of 260 patients (23-year-old) were enrolled in the study. The incidence of iron overload in the liver and heart was respectively 83% and 39%. The serum

ferritin showed a very strong and reverse interaction with MRI T2 of heart ($r = -3.54$, $p < 0.0001$) and liver ($r = -3.03$, $p < 0.0001$). There was also a meaningful interaction between the T2* MRI of liver and heart ($R = 0.29$, $p < 0.0001$).

Conclusion

The serum ferritin has very strong and inverse relationship with the T2* MRI of liver and heart in patients with thalassemia. Therefore, T2* MRI is an indicator of body iron with very high precision.

Keywords: Serum ferritin, Thalassemia, T2* MRI, liver, heart, iron overload