MRI Survey In Transfusion-Dependent and Non-Transfusion-Dependent MDS Patients

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Background

Several studies have shown cardiac diseases as causes of death in myelodisplastic (MDS) patients receiving transfusions.

Dayyani F et al. Cancer 2010;116:2174-9.

→ Iron overload may be considered an independent negative prognostic factor.

There are few and rather contradictory studies using Magnetic Resonance Imaging (MRI) in the evaluation of myelodysplastic syndromes.

Chacko J et al. BJH 2007;138:587–93 .

Konen E et al. AJH 2007:82:1013–6.

MIOMED

Aim

We report the baseline MRI findings at the end of the recruitment in the MIOMED (Myocardial Iron Overload in MyElodysplastic Diseases) study. In particular, we investigated myocardial iron overload (MIO), hepatic iron overload and biventricular functional parameters in MDS patients, outlying the differences between transfusion dependent and non transfusion dependent patients.

Methods

MIOMED is an observational, MRI multicentre study in low and intermediate-1 risk MDS patients who have not received regular iron chelation therapy.

Out of the 51 MDS patients enrolled, 48 underwent the baseline MRI exam.

Mean age was 71.7±8.5 years and 17 patients were females.

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Methods

- **Hepatic T2* values were assessed in a homogeneous tissue area and converted into liver iron concentration (LIC) .**

  Meloni A et al. BJH 2013;161:888-91.

- **MIO was assessed using a multislice multiecho T2* approach.**

  Pepe A et al. JMRI 2006;23:662-8.

- **Biventricular function parameters were quantified by cine sequences.**

  Marsella M et al. Haematologica 2011;96:515-20.

Results

The mean global heart T2* was 38.7±8.3 ms while the mean LIC was 7.6 ± 8.8 mg/g/dw.

Global heart T2* values were not significantly correlated with LIC or serum ferritin levels while a significant association between LIC and serum ferritin was detected (R=0.689; P<0.0001).

Thirty-two (66.6%) patients were non-transfusion dependent while 16 patients were transfusion-dependent.

The two groups were homogeneous for age, sex and hemoglobin levels but transfusion-dependent patients had significantly higher serum ferritin levels (1612±864 vs 711±430; P<0.0001).

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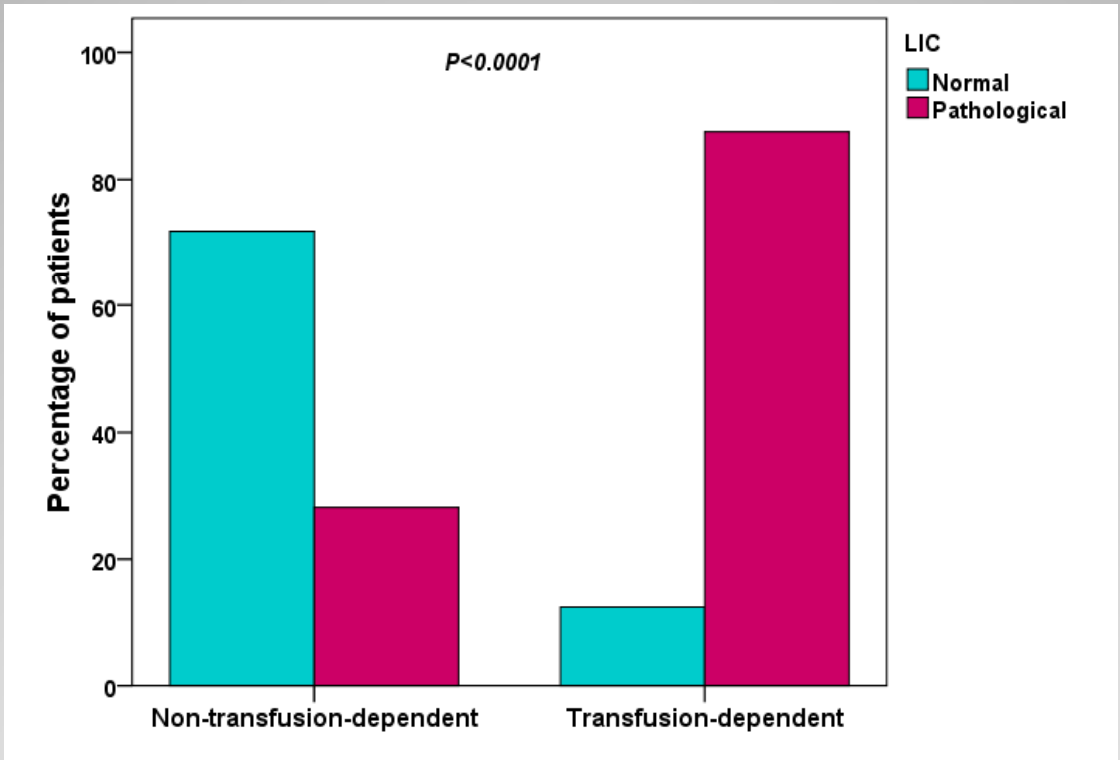
Results

The percentage of patients with detectable hepatic iron (LIC≥3 mg/g/dw) was significantly higher in the transfusion-dependent group.



MIOMED

Results

A significant heart iron (global heart T2* value <20 ms) was found in two patients, in both patients an heterogeneous pattern (some segments with T2* values >20 ms and other segments with T2* values <20 ms) was detected.

1) The first patient was not transfused and he did not show significant hepatic iron (LIC=2.12 mg/g/dw).

2) The second patient was regularly transfused and he received sporadically (less than two weeks/month) chelation treatment with deferoxamine in the 2 years before the MRI.

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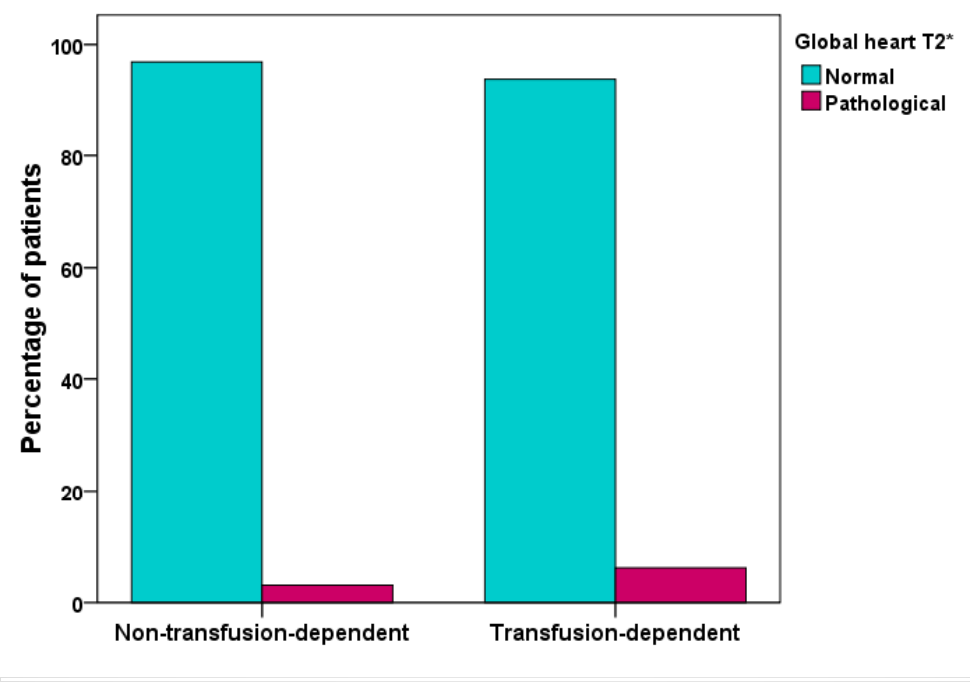
Results

The global heart T2*, the pattern of MIO and the number of segments with T2*<20 ms were comparable between the two groups.



Biventricular end-diastolic volume index, biventricular ejection fraction and left ventricular (LV) mass index were comparable between the two groups.

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Conclusions

As expected, regularly transfused MDS patients showed significantly higher levels of hepatic iron overload, that, however, was present in almost the 30% of non-transfusion-dependent patients, mainly due to increased intestinal iron and augmented erythropoiesis.

MIO is not frequent in MDS patients and it is not correlated with LIC and serum ferritin levels. Conversely, MIO can be present also in non-transfusion dependent patients and in absence of detectable hepatic iron. ⇒ These data remark the importance to check directly for heart iron with a more sensitive segmental approach avoiding to estimate heart iron burden from indirect indicators such as LIC, serum ferritin or transfusion state.

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