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Hepcidin-25-A useful clinical guide for iron-restricted erythropoiesis detection in haemodialysis patients

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Background: Iron-restricted response to erythropoietic stimulating agents (ESAs) is difficult to identify; the best criterion seems to be haemoglobin response to intravenous (IV) iron but hepcidin-25 could be a useful marker. There are some indices that hepcidin is directly regulated by the intensity of erythropoietic activity, more than by iron stores or inflammation. Thus, giving more iron to properly selected patients would restore the erythropoietic activity with a decrease in hepcidin ESAs doses and darbepoetin resistance index, so response on hemoglobin. The study investigates influence of additional IV iron doses on serum hepcidin-25 levels in haemodialysis (HD) patients without obvious iron deficiency, according to peripheral iron indices, as it is mentioned in reference guidelines.

Results: At baseline, 21% of patients had optimal iron status; none had absolute or functional iron deficiency, while 15% had iron overload. Mean haemoglobin was within the target range for HD patients. Reversal of iron-restricted erythropoiesis was further sustained by stable Hb and decrease in darbepoetin doses and darbepoetin resistance index. After a 75% augmentation in IV iron doses, prevalence of functional iron deficiency rose to 24% and of iron overload declined to 0%. More than that, hepcidin-25 decreased by 70%. Transferrin increased, TSAT and ferritin decreased, while Hb did not significantly change, although it shows an uptrend. Variation (assessment vs. baseline ratio) in serum hepcidin was correlated inversely with variation in transferrin and directly with variation in ferritin and in TSAT, supporting hepcidin's value for the diagnosis of iron-restricted erythropoiesis. A model of multivariable linear logistic regression predicted 34% of hepcidin variability. Only assessment versus baseline ratios of transferrin and ferritin were significant contributors.

Conclusions: Reversal of iron-restricted erythropoiesis after additional IV iron administration in haemodialysis patients without evident iron deficiency was associated with significant decreasing trend in serum hepcidin-25. Hepcidin-25 could add useful information to guide iron supplementation in ESAs treated dialysis patients when iron indices are not evocative for iron deficiency. Thus, trends in serum hepcidin-25 could be clinically useful, if confirmed in controlled studies.

Biography

Lavinia-Oltita Bratescu graduated from University of Medicine and Pharmacy from Timisoara, in Romania (on 2000). She completed her studies with specialization in Nephrology, in 2006. From 2007, she has worked as a neprologist in Sf Pantelimon International Healthcare Systems Nephrology and Dialysis Medical Center, in Bucharest. From 2012, she has been a chief physician of the same medical center. She completed her PhD in November 2013. She has participated in national and international nephrology conferences as a speaker and as poster presenter.

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