

CAN HEPcidIN HELP TO ASSESS IRON METABOLISM IN PREMATURE INFANTS?

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Background: Premature infants need iron supplementation. Their enteral iron absorption varies, but to some degree it seems that they can adapt their absorption to their iron needs. Individualized iron supplementation is difficult, as most laboratory parameters have limitations. Hepcidin is a newly described peptide hormone, which regulates iron homeostasis.

Aim: To evaluate whether serum hepcidin concentrations (Hep_(s)) correlate with parameters of iron metabolism, erythropoiesis and urinary hepcidin concentrations (Hep_(u)).

Patients and methods: 31 patients (23 - 32 weeks gestational age at birth) with clinical indication for blood transfusion. Prior to transfusion serum and urine were collected to determine hepcidine with ELISA. Furthermore, blood count and iron parameters were determined.

Results: Hep_(s) pre-transfusion was 52.4 (28.7-87.9) ng/ml, the two highest values (530 and 472.1 ng/ml) were measured in patients with suspected sepsis and candida infection, respectively. Log (Hep_(s)) and Log (Hep_(u)) correlated strongly ($r=0.751$, $p<0.0001$). Log (Hep_(s)) correlated with Log (Ferritin) ($r=0.57$, $p<0.001$), reticulocyte hemoglobin ($r=0.569$, $p<0.001$) and sTfR/logFerritin ratio ($r=-0.48$, $p<0.01$). Infants with lower hemoglobin concentrations ($<8\text{g/dl}$ vs. $\geq 8\text{g/dl}$) and higher reticulocyte counts ($\geq 100000/\mu\text{l}$ vs. $<100000/\mu\text{l}$) had lower hepcidin concentrations: 29.47 (8.65-34.54) ng/ml vs 64.44 (45.98-118.07) ng/ml, $p<0.05$ and 45.47 (14.55-61.70) ng/ml vs 83.02 (50.50-217.43) ng/ml, $p<0.01$.

Conclusion: This is the first report on hepcidin in premature infants. In this small group of sick premature infants factors other than iron status also had an impact on hepcidin concentration. Further evaluation on the use of urinary hepcidin for non-invasive monitoring in preterm infants appears justified.