

**ANEMIA, NOT UREMIA, MAY CONTRIBUTE TO THE ENHANCED EXPRESSION OF GLUCOSE TRANSPORTER 1 ON ERYTHROCYTE MEMBRANES IN HEMODIALYSIS PATIENTS: POSSIBLE ROLE OF HYPOXIA-INDUCIBLE FACTOR 1 $\alpha$**

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**BACKGROUND/AIMS:** Enhanced expression of glucose transporter 1 (GLUT 1) on erythrocyte membrane (EM) in hemodialysis (HD) patients has been proven by our previous study. However, the mechanism responsible for this abnormality is not clear.

**METHODS:** The expressions of GLUT 1 on EM and of hypoxia-inducible factor (HIF) 1 $\alpha$  mRNA and protein in neutrophil were assayed for 68 HD, 35 chronic anemic patients with different hemoglobin (Hb) levels and for 44 chronic renal insufficiency (CKD) patients having different renal functions with similar Hb levels.

**RESULTS:** We found that HD patients having lower Hb expressed higher GLUT 1 on EM and higher HIF 1 $\alpha$  mRNA and protein in neutrophil and vice versa. A similar scenario was also found in chronically anemic patients. Furthermore, expression of GLUT 1 on EM was positively correlated with expression of HIF 1 $\alpha$  mRNA in neutrophils for chronically anemic patients ( $r=0.753$ ;  $p<0.05$ ). However, this correlation was not found in HD and CKD patients.

**DISCUSSION/CONCLUSIONS:** In conclusion, anemia, not uremia, may contribute to the enhanced expression of GLUT 1 on EM and this abnormality was associated with the activation of HIF 1 $\alpha$ . However, further study is necessary to complete the puzzle.

**Key words:** Erythrocyte, glucose transporter 1, hemodialysis and hypoxia-inducible factor.