# 公募助成「腎不全病態研究助成」研究サマリー

| 研 究 名 | 血液透析中の輸血による貧血改善と脳内・肝臓内・下肢筋肉内の酸素動態改善の相違 |
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Hemodialysis (HD) patients frequently experience severe anemia, requiring intradialytic blood transfusion. Severe anemia leads to deterioration of systemic tissue oxygenation. However, few reports have examined the effect of intradialytic blood transfusion on tissue oxygenation changes. This study aimed to (i) monitor the differences in tissue oxygenation in the brain and liver during intradialytic blood transfusion, and (ii) elucidate the clinical factors affecting cerebral and hepatic oxygenation. Thirty-eight HD patients with severe anemia requiring intradialytic blood transfusion were included (27 men, 11 women; mean age, $70.2 \pm 1.6$ years). Cerebral and hepatic regional oxygen saturation ($rSO_2$) values were monitored using near-infrared spectroscopy (INVOS 5100c oxygen saturation monitor). Cerebral and hepatic $rSO_2$ were significantly higher after than before intradialytic blood transfusion ($p < 0.001$, both). Furthermore, hepatic $rSO_2$ was significantly higher than cerebral $rSO_2$ after transfusion ($p = 0.004$). In multivariate regression analysis, cerebral $rSO_2$ changes were independently associated with the natural logarithm of hemoglobin (Hb) ratio (Hb after/before transfusion) (standardized coefficient: 0.367, $p = 0.023$), whereas hepatic $rSO_2$ changes were independently associated with the natural logarithm of [Hb ratio/colloid osmotic pressure ratio (colloid osmotic pressure after /before transfusion)] (standardized coefficient: 0.378, $p = 0.019$). In conclusion, throughout intradialytic blood transfusion, brain and liver tissue oxygenation improved. Hepatic $rSO_2$ was significantly higher than cerebral $rSO_2$ at the end of HD. Furthermore, cerebral oxygenation changes were associated with only transfusion-induced Hb increase, whereas hepatic oxygenation changes were associated with both transfusion-induced Hb increase (positive changes) and ultrafiltration-induced colloid osmotic pressure increase (negative changes).