The impact of Iron Deficiency for Long-term Prognosis in Patients with Acute Heart Failure

Backgrounds: Iron deficiency (ID) is commonly observed in chronic heart failure (HF) patients and is associated with worse clinical outcomes. While ID is a frequent finding in acute HF (AHF), its impact on long-term prognosis in AHF patients remains unclear.

Methods: We analyzed 850 patients from the National Cerebral and Cardiovascular Center Acute Decompensated Heart Failure registry (January 2013-May 2016). Absolute ID was defined as serum ferritin <100 μg/L and functional ID (FID) was defined as serum ferritin 100-299 μg/L with transferrin saturation <20%. Cox regression adapted for competing events was used to evaluate the association between ID and risk of all-cause mortality or HF admission at one year.

Results: After excluding patients with incomplete data on iron studies, 578 patients were included in the final analysis. The primary outcome was composite of all-cause mortality and HF admission at one year post-discharge. Among them, 185 had absolute ID, 88 had FID and 305 had no ID. Patients with absolute ID had more adverse events than those with FID or no ID (P = 0.021). In multivariate Cox regression, absolute ID was significantly associated with increased risk of adverse events (HR 1.50, 95% CI 1.02-2.21, P = 0.040).

Conclusions: Absolute ID, but not FID, was associated with an increased risk of one-year mortality or HF admission in patients with AHF. Further studies are required to evaluate the role of repleting iron stores and its impact on clinical outcomes in patients with AHF.

Non-destructively differentiating degeneration grades of anterior cruciate ligament: a preliminary spectroscopic study

Endurance athletes have high muscle O₂ supply capacity due to developed capillarization. However, there is no method which can noninvasively and quantitatively evaluate muscle O₂ supply during exercise. Thus, the aim of this study was to compare the changes in muscle oxygenation during constant work exercise (CWE) between endurance-trained and untrained.
subjects by using near-infrared time-resolved spectroscopy (NIRS), which can measure muscle oxygenation quantitatively. Healthy control (CON, n = 11) and endurance-trained men (TR, n = 10) performed CWE at moderate intensity for 6 minutes. Changes in oxygenated, deoxygenated and total hemoglobin concentration (ΔOxy-Hb, ΔDeoxy-Hb, ΔTotal-Hb, respectively) and changes in muscle O2 saturation (ΔSmO2) during CWE in the vastus lateralis were evaluated by NIRSs. Peak pulmonary oxygen uptake (VO2peak) was significantly higher in TR than CON (48.8 ± 7.3 mL/kg/min, CON; 63.7 ± 3.6 mL/kg/min, TR; P < 0.01). ΔOxy-Hb, ΔDeoxy-Hb, ΔTotal-Hb and ΔSmO2 during CWE were significantly greater in TR than CON (all P < 0.05). Moreover, VO2peak was significantly correlated with the changes (r = 0.68, P < 0.01, ΔOxy-Hb; r = −0.58, P < 0.01, ΔDeoxy-Hb; r = 0.75, P < 0.01, ΔSmO2), while there was no significant correlation between VO2peak and ΔTotal-Hb. In conclusion, muscle oxygenation during CWE was significantly greater in TR than CON. Furthermore, VO2peak was significantly correlated with muscle oxygenation during CWE; in subjects with higher VO2peak, the more Oxy-Hb increased, the more Deoxy-Hb decreased.

P3-39
Orthostatic dizziness in children: a near-infrared spectroscopy study

(Yasunori Takahashi, Kiyonori Ogawa, Masahiro Nakamura, 38 boys and 30 girls) aged 14.3 (13.4-14.9) years old were included in the study. Their body and cerebral circulation at the first blood pressure dip (initial dip) were analyzed by the active standing-up test using a noninvasive continuous beat-to-beat pressure monitoring system and near-infrared spectroscopy. Thirty-nine adolescents experienced orthostatic dizziness during the active standing-up test (dizziness group) and 27 adolescents did not (non-dizziness group). There was no significant difference between the two groups in body blood pressure, but changes in cerebral oxygenated hemoglobin (Hb) levels were larger in the dizziness group (left: 8.0 [2.3 to 10.1] μmol/L versus 3.6 [2.5 to 7.2] μmol/L, P = 0.027; right: 5.9 [3.5 to 10.1] μmol/L versus 4.1 [1.7 to 6.0] μmol/L, P = 0.015). Circulating plasma volumes were measured in all subjects by 24-hour urinary sodium excretion. There was no statistically significant association between oxygenated Hb level changes and circulating plasma volume indices.

Conclusions: Orthostatic dizziness is thought to be caused by dysfunctional autoregulation of cerebral circulation. This may hence be the reason why cerebral circulation did not directly reflect body fluid volume.

P3-40
IIIb (Ph)型肺損傷に対する内視鏡的脇管ステント留置の適応

(Dosen Emergency Center)
○森永顕太郎, 田島 拓二, 河井健太郎
 Marxist 純
(消化器内科)
糸井 隆夫

【背景・目的】3b型肺損傷には胸腹手術による治療が主流である。内視鏡的脇管ステント留置の報告はあるが適応は未だ確立されていない。内視鏡的脇管ステント留置により軽快した3b (Ph)型肺損傷例の経験を踏まえ、文献的考察を加味し本法の適応・適応因子を示す。

【症例】44歳女性。総合格腫症合併中、腹部に前髄を受診。腹部dynamic CTで肺脇に造影剤を伴う異常所見を認めた。内視鏡的脇管造影で膈管外漏出像を認め、3b (Ph)型肺損傷と診断。ENPD tube