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Expression of alpha 1 intensities in haptoglobin 2-1 and its association with clinical course in aneurysmal subarachnoid hemorrhage

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Introduction & Aim: Delayed cerebral ischemia (DCI) contribute to poor clinical outcome following subarachnoid hemorrhage (SAH). Haptoglobin (Hp) comprised of two light (α) and two heavy (β) chains has anti-oxidant effect by free hemoglobin (Hb) binding. Among three phenotypes, Hp1-1 (two α1), Hp2-1 (α1 and α2), and Hp2-2 (two α2), higher protective effect for toxic free Hb is reported in Hp2-2 than Hp1-1. However, few studies have focused on Hp2-1 in determining outcome. This study aims to examine the α1 and α2 expression and to evaluate the association with outcomes in Hp2-1.

Methodology: Eighty-seven patients were prospectively enrolled: Hp1-1 (12, 13.8%); Hp2-1 (36, 41.4%); and Hp2-2 (n=39, 44.8%). Phenotypes was confirmed by western blotting. The relative intensities were measured as α intensities divided by the albumin intensities and expressed as the median (25^{th}-75^{th} percentile). The difference in α intensities according to DCI, angiographic vasospasm (AV) and outcome (mRS 0-2) in 6 months were analyzed.

Results: DCI (n=21, 53.8%) and AV (n=22, 56.4%) were more frequently observed in Hp2-2 than Hp1-1 (DCI, n=3 (25.0%) and AV, n=3 (25.0%)). The α1 intensities in Hp2-1 without DCI (0.70 (0.54-0.89)) and AV (0.65 (0.32-0.88)) were significantly higher than that with DCI (0.24 (0.14-0.32), $p<0.001$) and AV (0.32 (0.17-0.67), $p=0.046$). For α2 intensities, no significant difference was noted according to DCI ($p=0.377$) and AV ($p=0.459$). The α1 ($p=0.359$) and α2 ($p=0.233$) intensities did not differ significantly according to outcome.

Conclusions: Higher α1 intensities in Hp2-1 can be associated with lower DCI and AV. The α1 intensity degree may provide additional information on individual risk of secondary injury following SAH in Hp2-1.

Biography

Bong Jun Kim completed his Graduation from Hallym University, Department of Biomedical Sciences and studied experimentation in the virology laboratory for about a year during his undergraduate degree. In the same year, he acquired a certificate for handling experimental animals. He majored in Medical Genetics with a Master's degree. He studied COPD-associated gene mutations in a Korean cohort through next-generation genome analysis and statistical analysis. Currently, he collaborates with Neurosurgeons as a member of industry-academia cooperation group and studying neurosurgical diseases.

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