Effects of intermittent hypobaric hypoxia preconditioning on the expression of neuroglobin and Bcl-2 in the rat hippocampal CA1 area following ischemia-reperfusion

Q. Wu, K.X. Yu, Q.S. Ma and Y.N. Liu

Pathophysiology Department of Qinghai University Medical College, Xining, Qinghai, China

Corresponding author: Y.N. Liu
E-mail: liuyongnin_yn@163.com

Received February 11, 2015
Accepted May 14, 2015
Published September 9, 2015
DOI http://dx.doi.org/10.4238/2015.September.9.18

ABSTRACT. This study was aimed at understanding the effect of intermittent hypobaric hypoxia preconditioning (IHHP) on neuroglobin (NGB) and Bcl-2 expression in the hippocampal CA1 region of rats following global cerebral ischemia-reperfusion. Wistar rats were randomly divided into sham, IHHP control, global cerebral ischemia-reperfusion (IR group), and IHHP+IR groups. The four-vessel occlusion rat model of Pulsinelli was used for the IR groups, in which the common carotid artery was occluded for 8 min before reperfusion. Thionin and immunohistochemical staining were used to observe NGB and Bcl-2 expression in the hippocampal CA1 region. Data was analyzed using the SPSS software. There was a significant increase in the number of surviving cells in the hippocampal CA1 region of the IHHP+IR group (119.5 ± 14) compared to the IR group (41.7 ± 3.8) (P < 0.05). There was a significant increase in the expression of NGB and Bcl-2 in the hippocampal CA1 region of the IHHP+IR group compared to the IR group. By upregulating hippocampal NGB and Bcl-2 expression, IHHP
may play a role in neural protection by reducing hippocampal neuronal apoptosis following IR.

**Key words:** Immunohistochemistry; Intermittent hypobaric hypoxia; Global cerebral ischemia-reperfusion