An extension of unpredictable chronic stress on brain-derived neurotrophic factor expression in different aged rats hippocampus

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To the Editor: We appreciate the attentive and interesting article “Effects of unpredictable chronic stress on behavior and brain-derived neurotrophic factor expression in cornu ammonis 3 (CA3) sub-field and dentate gyrus of the hippocampus in different aged rats” written by Li et al.[1] The authors had shown stress had age-dependent effects on behavioral responses and hippocampal brain-derived neurotrophic factor (BDNF) expression in rats. In addition, stress and age were the main factors affecting the expression of BDNF. The aged stress rats showed lower BDNF expression compared to the young stress rats at every testing time point.

The effects of aging on the expression of BDNF in the central nervous system (CNS) emerged in this study were a controversial issue. Lapchak et al.[2] cited in this article pointed out that there were no significant age-related changes in BDNF and tyrosine kinase receptor B (trkB) mRNA expression in the hippocampus. But more studies had demonstrated that the expression of BDNF mRNA in hippocampal neurons of aging rats decreased significantly with age.[3,4] In addition, it was still controversial whether the expression of BDNF in CNS was accompanied by age-related changes in studies on senility related diseases such as Alzheimer disease, vascular dementia, Parkinson disease, and hypoxic-ischemic brain injury in the recent 5 years.[5] Moreover, it was found that the differences in the correlation between age and BDNF expression in brain regions were observed in a variety of stress animal models because of the differences in the selection of animal species, types of stressors, stress intensity, duration, frequency, and quantity and other factors.

What is more, the results of the study showed that age and stress were significant factors affecting BDNF expression in the CA3 sub-field and dentate gyrus of the hippocampus.[1] It can be clearly seen from the data in literature,[1] the author mistakenly wrote “21st day after stress” as “21st day of stress.” Aged stress rats showed significantly lower expression of BDNF in the CA3 sub-field than young stress rats on the 21st day after the stress period. In addition, aged stress rats showed significantly lower expression of BDNF in the CA3 sub-field of the hippocampus than young stress rats on the eighth day after the stress period. The data given in the literature[1] showed that the elderly rats were less able to cope with stress by down-regulation of BDNF expression. Overall, CNS response to stress was age dependent, and that aged stress rats may have a reduced ability to recover from stress because of a reduced BDNF expression.

The authors used a semi-quantitative method to detect the optical density value of BDNF, but the image processing and data analysis were not mentioned.[1] For more accurate quantitative analysis, researches had used confocal laser scanning microscopy or stereology and other technologies to realize three-dimensional measurement. Automatic optical imaging and stereoscopic cell counting had demonstrated an unprecedented ability to detect accurately and assessing quantitatively in analyzing specific areas of the brain. Such an ability can be used to explore the mechanisms of brain aging and age-related disease. Furthermore, stereology-based studies had played a significant role in understanding brain aging for the treatment of neurologic disease and mental illness.

Conflicts of interest
None.

References
1. Li Y, Ji YJ, Jiang H, Liu DX, Zhang Q, Fan SJ, et al. Effects of unpredictable chronic stress on behavior and brain-derived neurotrophic factor expression in CA3 subfield and dentate gyrus of the hippocampus in different aged rats. Chin Med J 2009;122:1564–1569. doi: 10.3760/0366-6999.2009.13.017.

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Corrigendum: In vitro Flow Perfusion Maintaining Long-term Viability of the Rat Groin Fat Flap: A Novel Model for Research on Large-scale Engineered Tissues

In the article, “In vitro Flow Perfusion Maintaining Long-term Viability of the Rat Groin Fat Flap: A Novel Model for Research on Large-scale Engineered Tissues”, which appeared on the pages 212-7, issue 2, vol. 131 of Chinese Medical Journal,[1] the author list, correspondence, and funding are changed to “Yang An1,2, Kerstin Reimers1, Christina Allmeling1, Jie-Li Liu1, Andrea Lazaridis1, Strauss Sarah1, Fang-Fei Nie2, Ze-Lian Qin2, Peter M. Vogt1

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Reference
1. An Y, Nie FF, Qin ZL, Xue HY, Chen LJ, Li B, et al. In vitro Flow Perfusion Maintaining Long-term Viability of the Rat Groin Fat Flap: A Novel Model for Research on Large-scale Engineered Tissues. Chin Med J 2018;131:213–217. doi: 10.4103/0366-6999.222334.