

FUNCTION OF GRP78 IN HIPPOCAMPUS IN A RAT MODEL OF POSTTRAUMATIC STRESS DISORDER

F. Han, Y. Shi

China Medical University, Shenyang, China

The mechanism of PTSD is not fully understood until now. Previous studies showed PTSD induced endoplasmic reticulum stress (ERS). Grp 78 plays important role in ERS.

Objectives: To explore changes of Grp78 and Ca^{2+} -CaM-CaMKII α in hippocampus of PTSD rats may reveal part of the pathogenesis.

Methods: The models of PTSD were created by SPS, which is an established animal model for PTSD. Wistar rats were selected for this study and randomly divided into a normal control group and SPS groups of 1d, 4d and 7d. The expression of GRP78 was examined by immunofluorescence, western blotting and RT-PCR. The intracellular free calcium level was examined by fluorescence spectrophotometer. CaM and CaMKII α were examined by RT-PCR. Apoptosis was examined by TUNEL and TEM.

Results: The results showed the intracellular free calcium level reached the peak 1 day after SPS stimulation, then gradually decreased to normal level. The expression of CaM 1 day after SPS is the most and then decreased. CaMKII α expression showed a significant down-regulation 1 day after SPS throughout and then gradually increased to normal level. Grp 78 reached the peak 4 day after SPS stimulation. TUNEL-positive cells significantly more than the normal control group and peaked at 7d after SPS stimuli, then gradually decreased to normal level. Furthermore, some cells had a characteristics change, including chromatin condensation, appearance of chromatin crescents, and nucleus fragmentation.

Conclusions: The results suggest that Grp 78 and changes of Ca^{2+} -CaM-CaMKII α in hippocampal might play an important role in the pathology of PTSD.