

## FUCTION OF GRP78 IN HIPPOCAMPUS IN A RAT MODEL OF POSTTRAUMATIC STRESS DISORDER

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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  $\text{Ca}^{2+}$ -CaM-CaMKII $\alpha$  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 $\alpha$  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 $\alpha$  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  $\text{Ca}^{2+}$ -CaM-CaMKII $\alpha$  in hippocampal might play an important role in the pathology of PTSD.