(BrdU) and counted the number of labeled cells in the dentate gyrus (DG) at different time points after the seizures (Fig. 2). We have found that simultaneously with development of memory impairments, an elimination of the neuroinflammatory alteration of the local microenvironment within the neurogenic niche. To check this supposition we stained rat brain slices for glial markers Iba-1 (microglial cells) and GFAP (astrocytes) and analyzed their expression at different time points after the seizures (Fig. 3). On the next day after the seizures an activation of microglial cells occurred in the DG.Two weeks later, no signs of microglial activation were present; moreover, astrocytic glia was also not increased in number and size as assessed by GFAP immunostaining suggesting no chronic neuroinflammation after single PTZ-induced convulsion. excessive young cells occurs in the germinative area of the hippocampus. The possible mechanism of aberrant maturation of the newly generated cells in the absence of their visible structural abnormality can be launched by

CONCLUSIONS

Single episode of generalized tonic-clonic seizures induced by PTZ led to slowly developing memory impairments in rats, accompanied by elimination of excessive newly generated young cells and transient activation of microglial cells in this neurogenic niche. The study was partially supported by RFH grant # 13-36-01277 and RFBR grant # 14-04-3152.

The Influence Of Brain-Derived Neurotrophic Factor (Bdnf) On Functional Activity Of The Culture Hippocampus During Hypoxia (In Vitro Modelling)

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Oxygen deficiency is the major cause of cell death at a large range of pathologies. The neurons are among body cells, which are the most sensitive to lack of oxygen, concerning the problem of brain hypoxia retains emergency medical and biological significance. The purpose of research is studying the impact of brain-derived neurotrophic factor (BDNF) on the functional activity of dissociated cultures of hippocampus in modeling normobaric hypoxia. In the in-vitro study we used dissociated hippocampal cell cultures derived from CBA mice 18 day embryos. On the 14th day of the cultivation, the cells exposed to hypoxia. 1ng / ml BDNF was preemptively added in the examined cultures. To measure the functional activity of the hippocampal cultures RNA detection probe SmartFlare was used. To assess the changes in the functional activity of the 1st day after the simulation hypoxia detection of mRNA BDNF was carried out.For detection we used RNA probe SmartFlare, whose fluorescence was determined as helium-neon laser with λ=543. During examination of the percentage BDNF mRNA-positive cells in primary cultures of dissociated hippocampal cultures between 7 and 14 days of development (Fig. 1) we found a significant increase of BDNF mRNA-positive cell group which preventively got BDNF, relatively to the control group. There also a slight increase in mRNA BDNF-positive cells relatively to controls at 21 days of development, but no significant differences were found. During analyzing the changes in mRNA BDNF-positive cells in the temporal dynamics, we found that the proportion of BDNF mRNA was significantly increased at the 14th day of development in comparison with 7 days. Next 21 hours of significant drop of the mRNA BDNF. Statistical differences between 7 and 21 days was found. These data suggests that the preventive addition of BDNF percentage to dissociated primary hippocampal cultures on the 14th day of the development affects the synthesis of endogenous BDNF in the most positive way.

RECEIVING OF ADENOVIRAL VECTOR FOR THE STUDY FUNCTIONS OF SYNAPTOPODIN, THE PROTEIN OF SPINE APPARATUS

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Synaptopodin is the founding member of a novel class of proline-rich actin-associated proteins highly expressed in telencephalic dendrites and renal podocytes. That protein expresses in dendrites of mature neurons in telencephalon. Synaptopodin exists in 3 isoforms: neuronal Synpo-short (685 AA), renal Synpo-long (903 AA), and Synpo-T (181 AA). All 3 isoforms specifically interact with alpha-actinin and elongate alpha-actinin-induced actin filaments. According data from recent studies, we can suggest that dendritic spines containing sinaptopodin greatly differ in structural and functional properties from the neighboring spines that do not contain sinaptopodin. Clusters of synaptopodin in spines colocalize with internal functional flow of calcium. Thus,