СЕКЦІЯ 4
АКТУАЛЬНІ ПИТАННЯ ХРОНОБІОЛОГІЇ ТА ХРОНОМЕДИЦИНИ

Bulyk R.Ye.

CHANGES OF MORPHOFUNCTIONAL STATE OF MEDIAL SMALL-CELL SUBNUCLEUS OF PARAVENTRICULAR HYPOTHALAMIC NUCLEUS ON THE BACKGROUND OF DIFFERENT ILLUMINATION PERIODS

Department of Medical Biology and Genetics
Bukovinian State Medical University

Nowadays the study of implication of neuroendocrine structures for central mechanisms of circadian rhythms is one of the most actual questions of modern chronophysiology. The changes of photoperiod, being a stress factor, desynchronize the rhythmicity of somatic and visceral function, coordination and modulation of body adaptation to various influences. Medial small-cell subnucleus of paraventricular hypothalamic nucleus (msPVN) is one of the structures, that are primary involved in neuroendocrine response in case of stress reactivity, regulating the activity of adenohypophysis by synthesis of corticotrophin-releasing hormone. The data, concerning morphofunctional characteristics of msPVN, exposed to photoperiod of different duration, hasn't been reported in literature.

The aim of the research was to reveal the influence of steady lighting on morphofunctional state of msPVN in different day intervals. Sexually mature rat males were divided for two groups: first group was subjected to standard lighting (light input from 8.00 to 20.00), second one – to 7-days lighting. Morphometry and densitometry of msPVN, quantitation of their RNA content were conducted by computerized image analyzer VIDAS-386 (Germany) within visible spectrum. Measured at 14.00 and 02.00, msPVN indices of rats, kept in hyperilluminized cages, weren't affected. The exception concerned RNA concentration in nucleolus, that was by 2,5% higher in the daytime and by 2,7% lower at night as compared with controls. The analysis of daily variations and rhythmicity of msPVN neurons functional activity in rats under photostimulation revealed them to be similar to those of intact animals. Steady lighting at 14.00 led to the increase of neuron area by 7,8% related to augmented area of nucleus and cytoplasm (by 7,4 and 16,2% respectively) in comparison with the group of previous time interval.

Though long-time lighting is thought to be stress factor and trigger of desynchronism, it doesn't concern the studied structures. Absence of accelerated msPVN functional activity and significant differences in neuron area under steady and standard lighting on 8^{th} day indicates the implication of adaptive-compensatory mechanisms, directed to maintain the stability of msPVN, and the impossibility of alteration of their regulation under light irritant.

Kushniryk O.V.

CURRENT ISSUES IN THE STUDY OF PRION INFECTIONS

Department of Medical Biology and Genetics
Bukovinian State Medical University

The prion proteins were discovered in 1982 and 2021 marks the 39th anniversary of the first findings in etiology of especially dangerous "slow" infections – prion diseases in humans and animals. The establishment of the role of infectious prion protein (PrPd) as the only factor in the pathogenicity of prion diseases turned out to be shocking to the scientific community, but subsequently changed the approach to research even in such conformational diseases as Alzheimer's disease, Parkinson's disease, diabetes mellitus and others, the pathogenesis of which is characterized by pronounced amyloid formation – protein aggregates including densely packed β-layers. Taking into account that over the past years considerable knowledge has been accumulated about the biology of prion proteins and the pathogenesis of the diseases they cause, the aim of this work is to characterize modern issues of prion infections for human and animals.

The formation and accumulation of the cellular prion protein PrPc is the result of the expression of the PRNP gene localised in human chromosome 20. In various animal species, the