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МАТЕРІАЛИ

79-го наукового медичного конгресу студентів та молодих вчених "Медицина XXI сторіччя"

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МАТЕРІАЛИ

79-ГО НАУКОВОГО МЕДИЧНОГО КОНГРЕСУ СТУДЕНТІВ ТА МОЛОДИХ ВЧЕНИХ: «МЕДИЦИНА XXI СТОРІЧЧЯ»

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differences in quantity and the sizes of bunches are noted rather intercostal nerves: from 1 - 3 to 15 - 18 bunches.

Conclusions. These data explain changeability of a clinical picture at damages and wounds of nerves at the identical levels. Therefore, data allow to conclude that the ratio of different axons peculiar to them is characteristic of certain nerves.

Morozova O.M.

THE PHENOMENON OF SELF-ORGANIZATION OF BIOLOGICAL SYSTEMS IN THE CONTEXT OF MEDICAL RESEARCH

Kharkiv National Medical University
Department of Medical and Biological Physics
and Medical Information Science
Kharkiv, Ukraine
Head of Department – Knigavko Volodymir Gilyariyevich,
Doctor of Biological Sciences, professor

Self-organization is a universal functional property, which such open systems as living organisms and biological objects possess. The application of phenomena related to the dynamic self-organization and orderliness of living matter is very important in the field of medical research today. The application of the concept of dynamic self-organization allows us to build a mathematical model for a complex biological system and makes it possible to understand the principles of the behavior of the studied system.

Now the scientific world recognizes that the process of protein folding is due to dynamic self-organization. Many studies have shown that the dynamic properties of cellular structures are consistent with the role of self-organization in their formation and functioning.

The dynamic and statistical methods used to study the electrocardiogram (ECG) show that the heart beat rate is irregular, which indicates that the system is far from thermodynamic equilibrium. Nonlinear dynamic models applied in electrophysiology and cardiology to describe multiscale systems use approaches using various microscopic and macroscopic variables as order parameters. They include the frequency of breathing and heart rate.

The application of nonlinear dynamic models allows us to analyze the state of the endocrine system and offer clinical treatment of its disorders.

Nonlinear dynamic models are widely used in neurophysiology for the analysis of magnetoencephalography, electroencephalography and functional magnetic resonance tomography. Analysis of brain activity using tools from the nonlinear theory of dynamics provides important information in the performance of some basic therapeutic procedures and pharmacological techniques. Instruments of nonlinear dynamics render unique additional information to classical techniques. They include Fourier analysis as a method of distinguishing qualitatively different records of the above mentioned methods in cases of Parkinson's disease, mental disorders or Alzheimer's disease.

The above mentioned examples show that, due to its universality, the self-organization study approach has the potential for a qualitative study of the homeostatic order and local interactions in complex biological systems. This approach can provide a practical contribution to the principles of managing system functions.

The question of research of dynamic systems in the context of self-organization gives a solution in studies of the work of the cardiovascular, endocrine, central nervous systems and also helps to find a solution in the study of the process of carcinogenesis.