duration of one session was approximately one hour and a half. Each session included a warming-up activity, a dumbbell lifting, push-ups, pull-ups, squats with a load, and the use of various training equipment. The average duration of each exercise was two or three minutes. The exercises followed each other in a continuous way. The premises for exercises were spacious and well–ventilated. The blood pressure of the patient was measured twice during each session, before and right after it. A stationary blood-pressure meter was used to perform the measurements.

The normal average systolic heart blood pressure of our patient was 154.0±7.3 mm Hg, the diastolic pressure was 104.7±2.4 mm Hg, and the heart rate was 83.3±7.1 beats per minute. All the results are displayed together with their standard deviations. The study shows that physical exercises have decreased blood pressure and increased heart rate. The average systolic blood pressure after physical activity was 139.4±7.3 mm Hg, the diastolic pressure was 87.6±6.6 mm Hg, and the pulse rate increased to 111.4±7.1 beats per minute. These results indicate the decrease in systolic pressure by 9%, the decrease in diastolic pressure by 16%, and the increase in the heart rate by 34%.

The analysis of the received results shows that there are two possible reasons which can cause changes in blood pressure and heart rate. Firstly, it is the increased body temperature, especially that of the muscles of the extremities. This resulted in the increased elasticity of blood vessels and their ability to expand. The greater elasticity leads to the increase in the effective radius of blood vessels. According to the Hagen–Poiseuille formula, this can significantly decrease blood pressure keeping blood volumetric rate unchanged. In addition, the increased temperature of a body lowers the viscosity of blood. Lower blood viscosity is also the factor contributing to lower blood pressure, and volumetric rate should remain unchanged.

In our further research, we will try to exclude all the factors contributing to the blood pressure decrease and trace their contribution separately.

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SERS-TECHNOLOGY AS A DIRECTION OF MEDICAL DIAGNOSTICS

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Surface enhanced Raman spectroscopy (Surface enhanced Raman spectroscopy (SERS)) is a new efficient and highly sentient method (from 4 to 14 orders that is more sensitive than magnitude of Raman spectroscopy), which over the last decade has found widespread usage in such fields of knowledge as Pharmacy, Chemistry, Ecology, Biosensorics and Biomedical Diagnostics, Nanosensorics and others.

The method is known as chemical «fingerprint» of individual molecule, because it gives the possibility for the molecular structure of substances of arbitrary physical state to be identified. Raman spectra consist of strips that correspond to the vibrational or rotational transitions that are characteristic of the molecular structure. They give the possibility to obtain information about the structure of macromolecules and their possible conformational changes, and may be used for definition and further identification of substances in small (even femtomolar) concentrations.

The differences in the SERS-spectra of biological fluids indicate the changes in the respective tissues and it is a powerful instrument in the diagnosis of diseases. A large number (amount) of research papers are dedicated to the possibility of technology using as the instrument of optical visualization. It is informed about the possibility of non-invasive formation of images using SERS - microscopy, histological analysis of biopsy material and *in vivo* detection of tumors.

Nowadays, significant efforts are directed on the synthesis of highly sensitive SERS - active nanostructures with a narrow distribution of enhancement factor of (EF) values. These nanostructures are effective for targeted delivery of medicine, photothermal therapy as tags in the preparation of sera for immunoassay etc.

So, SERS is a highly sensitive and multiplex technology. It is ideal for the development of diagnostic tests and visualization means.

СЕКЦІЯ 20
АКТУАЛЬНІ ПИТАННЯ КЛІНІЧНОЇ ІМУНОЛОГІЇ, АЛЕРГОЛОГІЇ ТА ЕНДОКРИНОЛОГІЇ

Каспрук Н.М.

НОЗОЛОГІЧНА СТРУКТУРА АЛЕРГОПАТОЛОГІЇ НА БУКОВИНІ

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У роботі розглянута нозологічна структура алергічних захворювань (АЗ) в регіоні за даними звернення на кафедру клінічної імунології, алергології та ендокринології і пульмоно-алерологічне відділення ОКЛ.

На сучасному етапі розвитку суспільства особливостями алергічних захворювань є зростання полівалентної алергії, поліморфізм клінічних проявів. Ця проблема привертає пильну увагу вчених і лікарів протягом багатьох років, що пов'язано з гетерогенністю клінічних і патогенетичних форм даної патології. Слід розуміти, що реєстрація випадків звернення за медичною допомогою не відображає стану розповсюдженості АЗ. З одного боку, до лікарів самостійно звертаються, головним чином, пацієнти із вираженими проявами захворювання. З іншого – більшість хворих, зважаючи на наявність лікарів-алергологів тільки у містах,