

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ  
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**



## **МАТЕРІАЛИ**

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**The aim of the study:** for the purpose of a more detailed study of the polycrystalline structure of rat blood films, we used the following information selection method.

**Material and methods.** From the entire calculated coordinate set of values of the fourth parameter of the Stokes vector of the digital microscopic image of the object of study, samples of certain extreme (characteristic) values were formed the maximum crystallization level of the optically anisotropic component of the biological preparation. The structure of the study of the polycrystalline component of rat blood in the differential diagnosis of the severity of the septic state using digital Stokes polarimetric microscopy consists of the following experimental and analytical steps: A. Formed representative sets of samples of polycrystalline blood films of the following groups of rats: 1. Intact rats - "control" group 1 (39 samples) 2. Sick rats (sepsis - light form) - "research" group 2: a) duration 12 hours. (39 samples) - research subgroup 2.1; b) duration 48 hours. (39 samples) - "research" subgroup 2.2. 3. Sick rats (sepsis - middle form) - "research" group 3: a) duration 12 hours. (39 samples) - —researchll subgroup 3.1; b) duration 48 hours. (39 samples) - "research" subgroup 3.2. 4. Sick rats (sepsis - severe form) - "research" group 4: a) duration 12 hours. (39 samples) - —researchll subgroup 4.1; b) duration 48 hours. (39 samples) - "research" subgroup 4.2.

**Results.** A structural-logical scheme and design of a phase-metric study of microscopic images of blood films of laboratory rats has been developed. A model analysis of the polycrystalline structure of blood films of laboratory rats is proposed. The optical arrangement of the system of phasometric mapping of microscopic images of blood films of laboratory rats was experimentally tested. An album of maps of the distribution of phase magnitude of the points of the digital microscopic image of blood films of rats from control group 1 and research groups 2–4 with different severity of septic pathology was obtained. The statistical significance of the differentiation of phase maps of microscopic images of polycrystalline blood films of rats from control group 1 and research groups 2–4 with different severity of septic pathology was determined.

**Conclusions.** The most diagnostic-sensitive statistical criteria for differentiating phase maps of the microscopic image of polycrystalline blood films of rats from control group 1 and research groups 2 - 4 with different septic pathology severity were found. The operational characteristics of the diagnostic strength of the method of polarization-phase microscopy of polycrystalline blood films of rats of the control and experimental groups are determined.

**Vladychenko K.A.**

## **COMPARISON OF INDICATORS OF SPERMIOLOGY RESEARCH BEFORE AND AFTER COVID-19**

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**Introduction.** COVID-19 is a disease that causes a wide range of damage to various organs and systems. It is important to assess the impact of the virus on reproductive health. Currently, there is insufficient information on the fertility status of men who have experienced COVID-19.

**The aim of the study:** to investigate the impact of COVID-19 on the results of spermiological research.

**Material and methods.** An analysis of the results of the examination of 65 men was carried out on the basis of the Medical Center for the Treatment of Infertility in Chernivtsi. Spermograms were examined in accordance with WHO recommendations in 2000, using an Olympus CKX-41 inverted microscope in a Makler chamber. The Statistica 10 program was used for statistical data processing.

**Results.** The average age of the men included in the study was  $32.48 \pm 7.96$  years. A statistical analysis of the indicators of spermiological research before and after the transfer of COVID-19 was carried out. The study included patients with subfertility conditions - mainly asthenoteratozoospermia (93.8%). These patients applied for examination due to the absence of pregnancy in the wife during the year. In all men, the results of a laboratory examination for the

presence of infections of the genital system were negative. The severity of the course of COVID-19 was assessed as mild in 52 patients (80%), moderate in 12 (18.4%) and severe in 1 man (1.5%). When analyzing the results of the spermograms of these patients after they had undergone COVID-19, the tendency towards the presence of asthenoteratozoospermia remained (95.3%), but a probable increase in the liquefaction time ( $85\pm 18$  min.) and sperm viscosity ( $31\pm 9$  mm) was revealed. When evaluating the results of the MAP test in spermograms after the transfer of COVID-19, no excess of the reference norms was found. The average values of indicators were – IgA –  $9.8\pm 7.9\%$  and IgG –  $8.2\pm 7.1\%$ . These data indicates that IgA and IgG units are not involved in this reaction. There is also no sperm agglutination, which in most cases is a manifestation of immunological reactions in sperm. During the observation period (2 years) for this group of patients, pregnancies in the natural cycle were not diagnosed. It was not possible to identify the pathogenetic factors of the increase in the liquefaction time and the viscosity of the sperm after the transfer of COVID-19, which requires further more detailed studies.

**Conclusions.** Analysis of the results of the spermograms of patients after suffering from COVID-19 has revealed a probable increase in the liquefaction time and viscosity of sperm. It has been found that supplementing the spermiological examination with the MAR test after having suffered from COVID-19 is impractical. Elucidation of the pathogenetic factors of the increase in the liquefaction time and the viscosity of sperm after the transfer of COVID-19, which requires further more profound studies.

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## **THROMBOPROPHYLAXIS IN UROLOGICAL SURGERY**

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**Introduction.** With the increased amount and diversity of operations performed for urological diseases the amount and diversity of their complications consequently increased. Moreover, in the last decades urologists started performing complicated oncological operations with substantial risk of both venous thromboembolism (VTE) and bleeding - both potentially lethal. VTE includes deep vein thrombosis and pulmonary embolism and represents a serious and sometimes fatal complication of surgery. The lack of appropriate urological studies additionally contributed to the problem of thromboprophylaxis. Prophylaxis of this complication is not clearly defined and is mainly based on information from other surgical specialties (like orthopedic or general surgery).

**The aim of our study** was to review the existing proposals of thromboprophylaxis for practical usage in most typical urological operations.

**Material and methods.** We analyzed the recent guidelines and publications on thromboprophylaxis in urological surgery for last 10 years.

**Results.** Most studies showed that pharmacological prophylaxis decreases the relative risk of VTE in surgical patients by approximately 50%, but with an increase in the relative risk of postoperative major bleeding of 50%. The right balance between VTE prophylaxis and bleeding complications is the main challenge for any recommendation. VTE is the presence of deep venous thrombosis (DVT) or pulmonary embolism (PE). The majority of symptomatic DVT originate in calf veins, and might extend to the proximal leg. If untreated, proximal VTE can develop PE in up to 50% of cases. DVT is a major preventable cause of mortality and morbidity worldwide. PE is preceded by a symptomatic DVT in just one-quarter of cases. After a PE, 2–4% of patients will develop chronic pulmonary hypertension. Between 17% and 25% of PEs are fatal and PE remains the most common form of preventable hospital mortality. High-quality evidence suggests that, of the cumulative risk during the first four weeks post-surgery, approximately 50% of major bleeds occur between surgery and the next morning and approximately 90% during the first four post-surgical days. In contrast, the risk of VTE is almost constant during these first four post-surgical weeks. The most authors recommend beginning of thromboprophylaxis the day after surgery. There