SUMY STATE UNIVERSITY
MEDICAL INSTITUTE

ABSTRACT BOOK

BIOMEDICAL PERSPECTIVE III

International Medical Conference

Sumy, October 26-28, 2021

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Sumy State University
2021

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY STATE UNIVERSITY
MEDICAL INSTITUTE

«BIOMEDICAL PERSPECTIVES III»

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FUNDAMENTAL MEDICAL SCIENCES

USP1 PROTEIN AS A POTENTIAL THERAPEUTIC TARGET IN THE TREATMENT OF CHRONIC MYELOID LEUKEMIA

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Introduction. The development of chronic myeloid leukemia (CML) is due to the appearance of the oncoprotein Bcr-Abl. Modern therapy for CML involves the use of Bcr-Abl tyrosine kinase inhibitors, but almost a third of patients develop resistance to these drugs. Therefore, there is an urgent need to develop new approaches for the selective reduction of Bcr-Abl cancer. Malignant cells have mechanisms to suppress the degradation of cancer proteins, the main role in this process is played by deubiquitination enzymes. We believe that Bcr-Abl avoids cellular proteolysis due to USP1 deubiquitinase, which leads to the accumulation of cancer protein and disease progression.

Aim. To study the effect of USP1 deubiquitinase on the level of Bcr-Abl oncoprotein in CML cells.

Materials and methods. K562 cells obtained from a patient with CML at the stage of blast crisis were used in the work. The Bcr-Abl/USP1 protein complex and the effect of deubiquitinase on oncoprotein levels were studied by Western blot and immunofluorescence analysis. Inhibition of USP1 activity was performed using compound ML323. The analysis of the results was performed by quantitative and statistical analysis.

Results. The interaction of deubiquitinase USP1 and Bcr-Abl in K562 cells was detected. The nuclear localization of the USP1 protein and its colocalization with Bcr-Abl in K562 cells were established. It has been shown that under the influence of the ML323 inhibitor, the protein changes its nuclear localization to cytoplasmic, which may be the cause of disruption of the USP1/UAF1 protein complex. It was found that inhibition of deubiquitin activity of USP1 by ML323 is accompanied by a decrease in the level of cancer protein by 65-67% compared with control and loss of colocalization for USP1/Bcr-Abl proteins.

Conclusions. It was found that the oncoprotein forms a nuclear protein complex with USP1 in CML cells. We believe that USP1 deubiquitinizes Bcr-Abl and thus disrupts its proteosomal degradation, promotes the accumulation of cancer protein and disease progression. The shown effect of USP1 deubiquitinase on the level of Bcr-Abl oncoprotein makes it a promising therapeutic target in the treatment of CML.

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CLINICAL AND MORPHOLOGICAL ASPECTS OF SEMINOMAS IN SUMY REGION

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Introduction. Seminoma, both in Ukraine and in the world, is the most common type of testicular tumors. Although testicular cancer is not the first in cancer (1.0-1.5% of all male tumors), but the relevance of this pathology is the defeat of the young male population, and as a consequence, the deterioration of quality of life and financial damage to the state. Most etiopathogenetic factors of seminoma are already known. But according to statistics, despite the available information, no action is taken to reduce the incidence of this cancer. In particular, only in 2018 Sumy region ranked sixth in the incidence of malignant testicular tumors.

Aim. To compare statistical data on the prevalence of testicular cancer in Sumy region and in Ukraine as a whole and to investigate the morphological features of male semen in Sumy region.

Materials and methods. We used the statistics of the Sumy Regional Clinical Oncology Dispensary to analyze the incidence of malignant testicular tumors among the male population of Ukraine and Sumy region in the period from 2011 to 2019; paraffin blocks with pathologically altered testicular tissue of sick men for the preparation of histological preparations.

Results. During the selected time period, we observed a tendency to increase the incidence of testicular cancer in Sumy region with a decrease in the average in Ukraine. In particular, in 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018 and 2019, the number of first-time patients (per 100 thousand population) in the country was 3.06, 2.87, 3.11, 2.83, 2.67, 3.31, 2.64, 2.4, 2.68, 2.73, respectively, ie there is a tendency to reduce the incidence. However, contrary to the average Ukrainian indicators in Sumy region, on the contrary, the incidence increased - 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019 year it was 3.68, 2.31, 2.79, 3.05, 3, 31 3.82, 4.33, 2.88, 1.96 people per 100 thousand population, respectively. That is, from 2013-2014, the number of newly diagnosed cases of testicular cancer in Sumy region is increasing compared to Ukraine. At the same time, the main group of patients was aged from 25 to 39 years. Since the vast majority of testicular tumors are represented by seminomas (50%), we studied its histological features. Bright rounded tumor cells with numerous pathological mitoses in the nuclei were observed on the obtained preparations with semen. Seminoma tissue is divided by connective tissue fibers into fields, which are tumor cells with foci of necrosis, pseudocysts, hemorrhages on the background of diffuse lymphocytic infiltration. In some places it is possible to detect the formation of new vessels by budding.

Conclusions. According to research, it was found that during the study period, the average incidence of testicular cancer decreased, but the number of newly diagnosed patients in the Sumy region in recent years is growing. There is a clear relationship between men's age and the incidence of this cancer.

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EFFECT OF IONIZING RADIATION ON HUMAN LEUKEMIA K562 CELLS: GROWTH INHIBITION AND APOPTOSIS

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Introduction. Radioresistance of cancer cells leads to the failure of radiotherapy and poor prognosis in tumor patients.

Aim. The work aims to investigate the sensitivity of human myelogenous leukemia K562 cells to the action of ionizing radiation.

Materials and methods. K562 cells were cultured in the RPMI 1640 medium with 10% FBS and 50 μg/ml of gentamycin (complete medium). We evaluated the growth of cell culture by counting the number of cells in the cytometric chamber at 24, 48, 72, and 96 h of cell cultivation. The cytostatic effect of the genotoxic factor was defined as the ratio of the total number of cells in the irradiated sample to the total number of cells in the control (non-irradiated) one. Staining with 0.1% trypan blue solution was used for the determination of dead cells. Fixed cell staining with fluorescent dye 4,6-diamidino-2-phenylindole (DAPI) was performed to identify apoptotic cells.

Results. Inhibition of cell growth of the K562 line after ionizing radiation exposure at a dose of 2 Gy was established. This effect was more pronounced with increasing duration of cell cultivation after cessation of genotoxic factor exposure. At 24 h following irradiation, there was no statistically significant difference in the number of irradiated cells compared with the control non-irradiated ones ($p>0.05$). A cell number decrease was revealed by 26.5±2.5% ($p<0.001$) at 48 h, by 34.6±1.1% ($p<0.001$) at 72 h and by 37.8±1.6% ($p<0.001$) at 96 h following irradiation. Identification of apoptotic cells was performed based on analysis of morphological features: chromatin condensation, nucleus fragmentation, and brightness of staining of fixed cells with fluorescent dye DAPI. We found that the number of apoptotic cells for 24 h after exposure to radiation at a dose of 2 Gy has not exceeded 4%. No statistically significant differences were revealed in the number of dead cells between irradiated (2 Gy) and non-irradiated cells at each identical time-point ($p>0.05$).

Conclusions. In response to the action of ionizing radiation (2 Gy), many metabolic and regulatory pathways are triggered in K562 cells, causing cell cycle arrest and DNA repair rather than induction of cell death by apoptosis or necrosis.

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MORPHOMETRIC CHARACTERISTICS OF THE MITOCHONDRIAL APPARATUS OF CARDIOMYOCYTES AT AN EARLY STAGE OF CHRONIC DOXORUBICIN-INDUCED CARDIOMYOPATHY IN RATS

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Introduction. There is growing evidence that mitochondria play a central role in modulating doxorubicin (DOX)-induced cardiac failure. To assess the cardiotoxic effects of DOX, it is of great importance to elucidate the nature and severity of damage to the mitochondrial apparatus of cardiomyocytes (CMC) at an early stage of chronic DOX-induced cardiomyopathy (CMP) in rats.

Aim. The aim of his study was a morphometric analysis of the mitochondrial apparatus of CMC at an early stage of chronic DOX-induced CMP in rats.

Materials and methods. The study was conducted on 20 white laboratory middle-aged rats: a control group and a group of animals with chronic CMP. The chronic CMP in rats was induced by DOX given at a cumulative dose of 16 mg/kg for 8 weeks. The animals were removed from the experiment on the 4^{th} day after last administered dose of the medicine. An electron microscopic research method was used. Ultrastructural analysis was performed using a JEM-100 CX microscope, and morphometric evaluation was done using the ImageJ data processing software. The number of mitochondria, the ratio of total cross-sectional area of mitochondria to the total area of CMC, as a volume fraction of mitochondria in CMC (%), and the number of intermitochondrial contacts (IMC) per 100 mitochondria were evaluated. The Mann–Whitney's test was used.

Results. A volume fraction of mitochondria in CMC decreased in experimental group of rats by 10,4% compared to the control group (32,27 [25,58;40,89] % versus 36,02 [32,35;40,12] %, $p=0,07$) on the 4^{th} day after the simulation of chronic DOX-induced CMP. The number of mitochondrial profiles was by 8,1% higher than the control values (33,5 [29;46] versus (31 [28;34], $p<0,05$). The number of IMC decreased by 27,8% compared to control group (26 [24;33] versus 36 [34;41], $p<0,01$).

Conclusions. A mitochondrial hyperplasia with simultaneous loss of intermitochondrial contacts in rats was found at an early stage of chronic DOX-induced cardiomyopathy. These changes of mitochondria indicate the beginning depletion of energy and plastic reserves of myocardium.

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THE EFFECT OF ALLOXAN-INCLUDED HYPERGLYCEMIA ON THE CORTICAL LAYER OF KIDNEY

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Introduction. The main reason for diabetes damage is high blood glucose level. Primarily it induces non-enzymatic glycosylation of proteins, oxidative stress, action growth factors, cytokines that cause kidney damage at the cellular level.

Aim. To investigate the effect of alloxan diabetes mellitus on kidney functions of rats.

Materials and methods. 24 white rats-7-month-old males were divided into two groups:control (6 animals) and experimental (18 animals).Experimental animals were administered alloxan alone times intraperitoneally at a dose of 40 mg / kg. Glucose level goats were measured 2, 12 and 24 hours after injection of alloxan and then weekly. Average glucose level remained 11.0 mmol / l ± 2.0 mmol / l. Animals were out of experiment on days 14, 21 and 45. Histological preparations of the kidneys were stained with hematoxylin and eosin.

Results. On the 14-th day of the observation, the capsule, medulla and cortex are microscopically distincted in the experimental rat`s kidney. There is a thickening of the glomerular capillaries walls. The numerous glomeruli have a spherical shape with a little uneven surface. The glomerular capsule contains a rounded shape.

On the 21-st day of the observation, it is more difficult to distinguish cortex from medulla. The cortex has a more uneven surface than in the previous term. The glomeruli lose their rounded shape. The cavity of the glomerular (Bowman's) capsule slightly increases.

On the 45-th day of the observation, the distal tubules lose their usual shape, become thinner and are difficult to distinguish from other tubules on the histological preparation. The cortex becomes spongy due to the cystic tubular dilatation. In addition, there is a thinning of the renal artery. The mesangial expansion and inflammation of interstitial cells in diabetic animals explains diffusely located lymphocytes and macrophages in the interstitial connective tissue of the kidney.

Conclusions. Thus, alloxan diabetes causes many early nonglomerular structural changes in the kidney. At the same time, the function of kidneys is enhanced. The changes in the cortex are increasing every day. It grows thinner, in some cases it takes on a spongy appearance. In the later stage of the experimental diabetes mellitus, disorders of the tubules of nephrons are responsible for changes in renal function.

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CELL COMPOSITION OF FORMING REGENERATING NEUROMA EXPOSED TO GRANULOCYTE COLONY STIMULATING FACTOR

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Introduction. The result of the regeneration of the cut nerve trunk depends on the regeneration of its specific components (restoration of function) and the nonspecific plastic properties of the connective tissue (scar formation). These processes are in a certain balance, which depends on many factors.

Aim is to study the features of the developing regenerative neuroma (RN) of the sciatic nerve under conditions of granulocyte colony stimulating factor (G-CSF) modulation.

Materials and methods. The work was performed on 40 male Wistar rats. They were undergone neurotomy of the right sciatic nerve. 20 animals were injected subcutaneously with G-CSF (Lenograstim) at a dose of 50 mg / kg from 1 to 3 days of the experiment. The rest of the animals (control) were injected an equivalent volume of saline. Harvesting of the nerve and then general histological examination of the neuroma was performed 1, 3, 7, and 14 days after neurotomy.

Results. It was shown that G-CSF, despite a significant increase in blood leukocytes on days 1 and 3 of the experiment, reduced the inflammatory infiltration of RN, primarily by granulocytes (3, 7 and 14 days). In this case, the number of fibroblastic cells was less than in the control and connective tissue fibers were formed in a smaller volume. The forming regenerate had more newly formed thin-walled blood vessels. From the side of the ends of the severed RN nerve, Schwann cells actively penetrated, gradually forming cords. They often had a larger volume than in the control. In the composition of the forming RN, starting from day 3 of the experiment, and on subsequent days, large, rounded or irregularly shaped cells with a rounded small homogeneous nucleus and abundant weakly basophilic cytoplasm were found in a significant amount. They visually differed from macrophages, and their number was higher than lymphocytes, in some areas by 10 times. On the 14th day of the experiment, they could form strands, fields of different sizes. Visually, it looked like an accumulation of homogeneous cells in the lacunae.

Conclusions. Under conditions of action of high doses of G-CSF, inflammatory infiltration and plastic reaction of the connective tissue in the developing RN are inhibited. The process of penetration into the RN of Shavnov's cells is somewhat activated. Cells appear in the RN and gradually accumulate until the 14th day, but they visually cannot be unambiguously attributed to neural, connective tissue or hematogenous.

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PECULIARITIES OF THE MICROVESSELS OF HUMAN OLFACTORY BULBS UNDER THE COVID-19-ASSOCIATED PNEUMONIA

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Introduction. The COVID-19 pandemic started in 2020 noted the attention of clinicians to the state of the olfactory system. The most important factor of research interest was the development of anosmia as one of the important diagnostic symptoms of the disease. Existing studies indicate vascular changes and neuroimaging signs of olfactory bulb (OB) atrophy in patients with COVID-19, but microvascular changes in this pathology remains poorly understood.

Aim. The aim of the study is to evaluate the morphometric parameters of the vessels of the microcirculatory tract of the olfactory bulbs under the COVID-19-associated pneumonia.

Materials and methods. The study included 22 pairs of OBs of males and females obtained by autopsy. Group 1 consisted of OB of nine individuals with COVID-19-associated pneumonia. Group 2 included eleven peoples OB who died of other causes. After fixation in 10% neutral formalin, the material was dehydrated and embedded in paraffin according to conventional methods. Histological sections were stained with hematoxylin and eosi. The study of micropreparations and morphometric studies were performed using an Olympus VH-41 light microscope with a set of appropriate licensing programs. In order to objectify the obtained data, the outer and inner diameters of blood microvessels and the Kernogan's index were determined with describing the main morphological characteristics. The obtained data were subjected to statistical analysis using IBM SPSS Statistics 26.0.

Results. Examining of the material with small magnifications of a light microscope indicate that micropreparations of OB have showed cell-free zones with signs of neurocytolysis without significant differences between groups and the features of interstitial and perivascular edema mainly in patients of group 1. It was found that in group 1 outer diameter of microvessells, vascular thickness walls and Kernogan's index in human OB are statistically significantly higher in group 1. No statistically significant differences between groups in the inner diameter of microvessels were found.

Conclusions. The obtained results indicate an increase in the thickness of the vascular wall of the OB's capillaries due to perivascular edema, which may play a role in the development of edema of the OB and anosmia in patients suffering from COVID-19-associated pneumonia.

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CHRONIC ALCOHOL-RELATED BRAIN DAMAGE AND CHANGES IN INTERLAMINAR ASTROCYTES

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Introduction. Alcohol-related brain damage describes the effects of chronic alcohol consumption on human brain structure and function in the absence of neurological concomitants of alcoholism such as Wernicke encephalopathy and Korsakoff syndrome.

Aim. The aim of this study was to analyze astrocyte cell density (ACD), astrocytes cell body area (ACBA) and pial glial "membrane" thickness in cortical layer I of the brain of patients with chronic alcohol-related brain damage (ChARBD).

Materials and methods. A postmortem examination of the neocortex of the frontal and temp lobes of patients (3 patients with ChARBD and 4 patients without brain diseases) was carried out. The immunohistochemical marker GFAP was used. The count glial cell (at least 100 cells in each cortical layer) in non-overlapping fields at high power magnification (x400) was performed. The area of one field was 66585.8 mm^2. The pial glial "membrane" thickness, ACD and AACB was analyzed using ImageJ. The non-parametric Mann-Withey test was done.

Results. The average age of patients with ChARBD was 64.0±8.8 years. The average age of patients without chronic alcohol intoxication was 62.5±6.0 years (p=0.69). The pial glial "membrane" was detected as a thick network of strong GFAP-positive fibers in subpial zone of neocortex. The pial glial "membrane" thickness in neocortex in patients with ChARBD was increased by 1.8 times compared to patients without this disease (11.38 [8.90;12.41] μm versus 6.44 [5.25;7.76] μm, p=0.0000). The ACD in cortical layer I in patients with ChARBD was increased by 1.8 times (231.26 [193.96;313.32] cells/mm^2 versus 126.82 [104.44;149.20] cells/mm^2, p=0.0000). The ACBA in cortical layer I in patients with ChARBD was increased by 1.1 times compared to patients without this disease (57.75 [47.49;73.69] μm^2 versus 51.72 [41.67;64.66] μm^2, p=0.0038).

Conclusion. Interlaminar astrocytes in neocortex of patients with chronic alcohol-related brain damage were characterized by increased cell density, hypertrophy cell bodies and an increase in number of short processes in subpial zone.

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CLINICAL AND MORPHOLOGICAL FEATURES OF GLIOBLASTOMA

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Introduction. Glioblastoma is one of the most common tumors of the central nervous system, accounting for about 62% of all astrocytic tumors. Glioblastoma is very prone to recurrence and metastasis. The prognosis for patients with glial tumors of the brain is extremely unfavorable. The survival rate of patients with glioblastoma after 5 years after combined therapy is quite low - 10%. That is why the study of the course, pathomorphological changes of organs in patients with glioblastoma remains relevant.

Aim. To carry out a clinical analysis of the course and identify morphological featues of glioblastoma of the frontal lobe of the left hemisphere of the brain.

Materials and methods. An analysis of the medical history of a 36-year-old patient was performed. During the pathomorphological examination of the woman skull trepanation, macroscopic examination, sampling for further microscopic examination (hematoxylin and eosin staining) were performed. The study is according to the m and ethical principles of the Declaration of Helsinki.

Results. After the analysis of the medical history, it was established that the patient had been ill since 2017. The main complaint of the patient was a headache. According to the clinical examination, the diagnosis was: Neoplasm of the left frontal lobe of the brain. Radical removal of the tumor was performed on 12.12.2017, histological diagnosis is glioblastoma. Recurrence of a neoplasm of the left frontal lobe of the brain was detected a year after surgery. The patient died 1.5 years after diagnosis, with a postmortem diagnosis: prolongatio morbi, cerebral edema, plethora and parenchymal dystrophy of internal organs. At pathological examination macroscopically: a neoplasm of the left frontal lobe of the brain with germination in the dura mater and the wall of the left lateral ventricle. Microscopically: tissue edema, vascular plethora, glioblastoma germination, peripheral vascular growth, necrosis, hemorrhage, hemosiderophages and diffuse lymphocytic infiltration. Glioblastoma progressed rapidly in this case, lifespan from the time of diagnosis is 1.5 years and from the moment of surgical treatment of recurrence was 6 months.

Conclusions. Thus, the results of the study confirm that glioblastoma of the brain is a malignant tumor with rapid progression, frequent development of recurrences and complications, severe course and a very unfavorable prognosis for the life of patients.

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MORPHOLOGY OF NANOCRYSTAL BIOMINERALS OF BENIGN THYROID TUMOR

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Introduction. It was reported that 19.8–32.1% of thyroid nodules have signs of one of the different calcification types and that the prevalence of calcification is around 40% in malignant and 20% in benign nodules. The occurrence of calcification in some thyroid lesions could be easily identified and provides useful information regarding tentative diagnoses. A better understanding of the mechanisms of thyroid calcification can be useful both in planning and in the actual treatment of patients.

Aim. of our work is to study the morphology, structure, and phase composition of pathological calcifications in benign thyroid tumors.

Materials and methods. We studied 48 cases of benign thyroid neoplasms with pathological biomineralization to establish their structural, phase, and elemental composition, as well as morphological features. All samples were examined by histology and histochemistry in order to verify the histological type of thyroid tumors and confirm the presence of calcifications. SEO-SEM Inspect S50-B was used for scanning electron microscopy. Spectra were analyzed in the standard software of the microanalysis system. X-ray diffraction was performed with a diffractometer DRON-7.4 ("Burevestnyk"). Transmission electron microscopy with electron diffraction was performed with TEM-125K (SELMI, Ukraine).

Results. The biomineralization occurred in the connective tissue of nodes capsules, sometimes extended to the thyroid parenchyma, interfollicular space, colloid, follicular epithelium. The calcifications of the capsule and parenchyma were stained brown when the thyroid tissue was stained by the von Koss method. At the same time, colloidal calcifications were not stained.

Conclusions. According to the data of complex researches, it is established that pathological biomineral deposits of benign thyroid neoplasms are represented by nanocrystalline apatite and calcium oxalate. Calcifications of the capsules of the nodes and large mineral deposits of the thyroid parenchyma consist of hydroxyapatite, and calcifications of the correct rectangular shape, located in the colloid, consist of calcium oxalate. Therefore, the obtained data can be further used to diagnose benign and malignant neoplasms of the thyroid gland.

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EXPERIMENTAL MODEL FOR THE STUDY OF DYSHYDRIA IN LABORATORY RATS.

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Change in the chemical composition of the testes of laboratory rats under conditions of dyshydria.

Introduction. The chemical composition of various tissues depends on the functional load of tissues, the general metabolism of the body and the nature of the food consumed by them.

Aim. The purpose of this experiment is to study the changes in the trace element composition of the testes of laboratory animals (for example, cellular dyshydria).

Materials and methods. We studied 24 adult male rats, which were divided into two series: intact (control) and experimental. The latter is divided into 3 groups, 6 animals in each depending on the degree of dyshydria: mild, moderate and severe. Experimental animals throughout the study received granular feed and hypertonic sodium chloride solution 12%. Collection of animal testes was performed in accordance with unified methods. Chemical analysis of the removed organs was performed by the method of spectral analysis in the morphological laboratory of the Department of Morphology on the atomic absorption spectrophotometer C-115M1 according to the generally accepted method. The content of the most active trace elements in the testes of rats was studied: copper, iron, zinc, magnesium, chromium and lead.

Results. The results of the study suggest that in experimental animals that were in conditions of mild dehydration, compared with the control series, the average values of copper (4.08 ± 0.018 and 4.11 ± 0.101 μg / g), magnesium (5.75 ± 0.018 and 5.91 ± 0.121 μg / g), chromium (3.82 ± 0.011 and 3.83 ± 0.013 μg / g), lead (1.90 ± 0.064 and 1.97 ± 0.030 μg / g), respectively, not have a significant statistical difference, but the amount of iron and zinc increases by 10% and 12%, respectively. During further study at the end of the 20-day period (average degree of cellular dehydration), the indicators of copper, magnesium, chromium, lead also do not change significantly. But the amount of iron and zinc increases significantly compared to the control group by 52% and 35%, respectively. Animals with severe dyshydria underwent significant changes in the content of elements such as iron, zinc and magnesium, increasing by 45%, 23% and 6%, respectively, control series. But again, there were no statistically significant changes in all other elements.

Conclusions. Thus, after analyzing all the indicators we studied, we have the right to say that in the testes of experimental animals under the influence of cellular dehydration of various kinds, the most statistically significant changes occur with the content of chemical elements such as iron, zinc and magnesium.

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INFLUENCE OF ANTITUMOR CHEMOTHERAPEUTICS ON BONE METABOLISM IN THE AREA OF LONG BONE DIAPHYSIS DEFECT

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Introduction. Cancer patients have an increased risk of bone fractures, which heal on the background of antitumor chemotherapy. However, the effect of antitumor chemotherapeutics on the formation (anabolism) and resorption (catabolism) of bone regenerate tissue in the scientific literature we have not found.

Aim. to study the expression of markers of bone resorption of cathepsin K and bone synthesis of osteopontin in the defect of the diaphysis of the long bone under the action of antitumor chemotherapeutics.

Materials and methods. The experiment involved 96 white laboratory rats, which boron inflicted a defect with a diameter of 2 mm in the middle third of the fem shaft. Animals were divided into control and 3 experimental groups, which on the 1st, 21st and 42nd day after injury were injected intramuscularly with anticancer chemotherapeutics: I-doxorubicin (60 mg / mg), II-5-fluorouracil (600 mg / m²), III - methotrexate (40mg / m²). On the 15th, 30th, 45th, 60th day after injury, the animals were removed from the experiment. The expression of cathepsin K and osteopontin was evaluated by immunohistochemical method.

Results. On the 15th day of the experiment in all experimental groups in the bone defect found increased expression of cathepsin K. On the 30th day the expression of cathepsin K in group I was 31.17 ± 1.47%, in II - 30.67 ± 1.37 %, in III - 31.67 ± 1.75%, which is 9.37% ($p = 0.02$), 7.61% ($p = 0.04$) and 11.12% ($p = 0.01$) above control indicators. The intensity of staining of the cytoplasm of osteocytes is high (+++). On the 60th day, the expression of cathepsin K in group I was 28.50 ± 1.87% of cells, in group II - 26.67 ± 1.63%, in group III - 27.83 ± 1.17%, which is 25.72% ($p<0.005$), 17.64% ($p<0.005$) and 22.76% ($p<0.005$) more than in the control. The color intensity of the cytoplasm is moderate (++). However, the level of osteopontin expression in the regenerate area in all experimental animals was lower than the control values from the beginning of the study. On the 30th day it was in group I 17.33 ± 1.21%, in group II-18.50 ± 1.05%, in group III-17.50 ± 1.05%, which is 16.80% ($p<0.005$), 11.19% ($p<0.005$) and 18.15% ($p<0.005$) lower than in the control. The intensity of cytoplasmic staining is low. On the 60th day, the expression of osteopontin in group I was determined in 21.17 ± 1.47% of cells, in group II - 22.17 ± 1.47%, in group III-20.83 ± 1.17%, which is 20.62% ($p<0.005$), 18.87% ($p<0.005$) and 21.89% ($p<0.005$) lower than in the control. The intensity of staining of the cytoplasm of immunoactive cells is moderate.

Conclusions. The use of antitumor chemotherapeutics causes an increase in the expression of cathepsin K regenerate cells and a decrease in osteopontin expression, which indicates a slow formation of bone regenerate tissue, its low mineralization and increased resorption processes in the defect area.

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SCHIZOPHRENIA AND REACTIVE ASTROCYTES

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Introduction. Increased cortical microgliosis in people with schizophrenia has previously been observed in post-mortem studies. We hypothesized that astrogliosis is associated with changes bodies of astrocytes in different cortical layers in the neocortex of individuals with schizophrenia.

Aim. The aim of this study was to analyze astrocytes cell density (ACD) and astrocytes cell body area (ACBA) in cortical layer I, III and V of the brain of patients with schizophrenia.

Materials and methods. A postmortem examination of the neocortex of the frontal and temp lobes of patients (2 patients with schizophrenia and 4 patients without brain diseases) was done. The immunohistochemical marker GFAP was used. The count glial cell (at least 100 cells in each cortical layer) in non-overlapping fields at high power magnification (x400) was performed. The area of one field was 66585.8 mm^2. ACD and ACBA was analyzed using ImageJ. The non-parametric Mann-Withey test was done.

Results. The ACD in cortical layer I of patients with schizophrenia was increased by1.4 times (179.04 [134.28;238.72] cells/mm^2 versus 126.82 [104.44;149.20] cells/mm^2, p=0.0002), in cortical layer III – by 1.4 times (74.60 [59.68;104.44] cells/mm^2 versus 59.68 [44.79;59.68] cells/mm^2, p=0.0000) and in cortical layer V – by 1.2 times (104.44 [89.52;134.28] cells/mm^2 versus 89.52 [44.76;119.36] cells/mm^2, p=0.0023) compared to patients without this disease. The ACBA in cortical layer I of patients with schizophrenia was increased by 1.5 times (79.99 [62.48;99.62] μm^2 versus 51.72 [41.67;64.66] μm^2, p=0.0000), in cortical layer III was decreased by 1.5 times (37.84 [30.13;46.90] μm^2 versus 55.39 [44.96;67.65] μm^2, p=0.0000) and cortical layer V – by 1.1 times (40.48 [32.74;49.88] μm^2 versus 43.86 [35.61;55.70] μm^2, p=0.0056) compared to patients without this disease.

Conclusions. Reactive changes in astrocytes in different cortical layers of patients with schizophrenia were characterized by cell proliferation in cortical layer I, III and V, hypertrophy of interlaminar astrocytes (cortical layer I) and dystrophy of protoplasmic astrocytes (cortical layers III, V).

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HOW MOLECULES IN THE BRAIN MAKE US EXTROVERTS AND INTROVERTS

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Introduction. Not long ago the concept of extraversion and introversion considered only in the context of psychology. However we know that the causes of human behavior depend on brain activity. This will provide a basis for psychotherapeutic and medical correction of social behavior disorders.

Aim. The aim of the study is to determine the features of the structure and functioning of the human brain, which determine the extroverted and introverted behavior of the individual.

Materials and methods. Analysis and systematization of neurobiological research results.

Results. The difference in behavi patterns between introverts and extroverts lies in the different sensitivity of brain neuron receptors to dopamine and acetylcholine molecules.

Dopamine is a neurotransmitter that plays a major role in the functioning of the reward system. Extrovert's dopamine receptors are less sensitive, so a certain dose will give a weaker chemical effect than for introverts. To achieve their "level of happiness", such people must resort to external stimulation of the reward system. That is why extroverts spend more time on social contacts, looking for novelty and tend to take risks more often. Introverts have too much dopamine to cause excessive stimulation, so they try to refrain from situations that cause it.

Scientists have confirmed this hypothesis in an experiment. The volunteers used a methylphenidate stimulant that increases the amount of dopamine, and then the researchers checked the speed of the reaction, As a result, methylphenidate did not affect the dopamine system of introverts. This confirms that the connection with the inner world is more important than the external reward.

Acetylcholine, a neurotransmitter involved in internal rewards. It is easier to get it in a quiet environment, so introverts tend to be alone.

In addition to different sensitivity to chemicals, there are differences in the length of the dopamine and acetylcholine pathways. The first passes through areas that process visual, auditory and gustatory information. And the second is much longer: it extends through the right and left frontal lobe, hippocampus, the right front insular. The considerable length of this neural pathway explains why introverts tend to overthinking.

Conclusion. Differences in the response of nerve cells to specific chemicals and length nerve pathways define the concepts of extraversion and introversion.

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THE EFFECT OF M2-MACROPHAGES ON THE MALIGNANT COURSE INVASIVE BREAST CARCINOMA OF NO SPECIAL TYPE WITH MEDULLARY PATTERN

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Introduction. Breast cancer is the leading cause of death in women due to malignant tumors. Invasive breast carcinoma of no special type with medullary pattern accounts for only 1% of all types cancers. Immunohistochemical diagnosis of medullary breast cancer is a leading factor in determining the prognosis and selection of treatment for this type of neoplasia. The study of the microenvironment of the tumor evaluates the aggressiveness of the tumor. The presence of inflammatory infiltrate has been shown to reduce the invasive and metastatic properties of the tumor. On the other hand, the presence in the tumor-associated environment of M2 macrophages that exhibit prooncogenic and angiogenic properties is a prognostically unfavorable sign for the course of the neoplastic process.

Aim. Study of immunohistochemical features of medullary carcinoma for the presence of M2 macrophages.

Materials and methods. invasive breast carcinoma of no special type with medullary pattern, immunohistochemical investigation of breast cancer tissue.

Results. Immunohistochemical examination of the microenvironment of medullary carcinoma of the breast revealed a significant number of macrophages, among them a significant proportion were M2-macrophages (CD163 + cells), which were diffusely localized in all components of tumor tissue.

Conclusions. The presence of M2 macrophages in the tumor-associated microenvironment of tumor cells suggests a prognostic-adverse effect on the course of the neoplastic process of medullary carcinoma of the breast. Detection of these markers shows tumor aggressiveness, increased activity in angiogenesis and invasive growth.

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MELANIN REVEALING IN RAT SKIN

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Introduction. The melanin - pigment of melanocytes is the primary skin pigment. It determines skin and rat coat coloration. Melanin is distributed throughout the keratinocytes within granules - melanosomes. Synthesis and distribution of melanin are key for dyschromia - discoloration of the skin and different pigment disorders. Thus, melanin is an actual target of the investigation.

Unfortunately, as common lab animals, rodents don't have abundant melanosomes in the epidermis, and because of this, melanin is not visible by its color and requires highlighting.

Aim. To establish a useful method of melanin determination in the rat skin.

Materials and methods. We used 12 rats with dark coats. 5 mm of skin was taken out of the scapular region, fixed with formaldehyde 10%. Melanin staining techniques were used, such as Schmorl's method (ferrum-based), routine hematoxylin-eosin, and specific Warthin-Starry (WS) technique, and Fontana-Masson (FM) staining (both silver-based).

Results. Considering translucency of the epidermis and contrasting melanin granules within, we estimated clear look as two scores, visible melanin with interference as 1 score and absented visible melanin as 0 score. So, hematoxylin-eosin got 0, Schmorl's technique got 1, and a tie of FM and WS techniques got both 2 scores. Thus, FM had a smooth pinkish background of epidermal tissue with sharp, small melanin granules at the germinative layer; WS demonstrated contrasting melanin granules, even more in amount, but a bit less smooth back. Schmorl's technique displayed melanin less dark and had a significant level of interferences at the same time with darker epidermal coloration.

Conclusions. Routine hematoxylin-eosin staining is useless with melanin detection aim. There are two effective stainings for melanin detection: Fontana-Masson and Warthin-Starry, while Schmorl's technique is less clear. Silver-based staining procedures are essential in melanin highlighting, and these techniques may be used to visualize melanin metabolism in rat skin.

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EPIDEMIOLOGICAL CHARACTERISTICS OF HYPERPLASTIC ENDOMETRIAL PROCESSES IN SUMY REGION

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Introduction. Hyperplastic endometrial processes a common pathology in women of different ages. They are the cause of infertility in women of reproductive age, often malignant during perimenopause and postmenopause, characterized by a high recurrence rate.

Aim. To collect and analyze data on the incidence of endometrial hyperplastic processes in the Sumy region.

Materials and methods. The study was performed on the basis of the Sumy Regional Pathological Bureau, the Department of Pathological Anatomy of the Sumy State University Medical Institute, the Sumy Regional Clinical Oncology Dispensary, the Clinical Maternity Hospital of the Blessed Virgin Mary for the period 2011-2020. The analysis was performed of outpatient charts and medical case histories of women with hyperplastic endometrial processes.

Results. It was found that the largest number of cases of endometrial hyperplastic processes was in 2016, and the smallest ones - in 2020. Hyperplasia without atypia was more common in 2016, atypical hyperplasia - in 2017 are among them. The lowest number of endometrial hyperplasia without atypia was observed in 2020, and atypical endometrial hyperplasia - in 2011. The highest number of endometrial hyperplasia without atypia was observed in women aged 45-55 years old, the lowest number - in women aged 66 years and older. The highest number of atypical endometrial hyperplasia was also observed in women aged 45-55 years old, and the lowest ones - in women under 30 years old. Endometrial polyps were more common in 2019, less common - in 2012. The largest number of glandular polyps of the endometrium was detected in 2018, and the smallest ones - in 2012. Glandular-fibrous polyps were more common in 2019, less common - in 2011. The number of fibro-glandular-cystic polyps increased in 2019, and in 2011 and 2016 were not detected at all. The largest number of glandular polyps of the endometrium was found in women aged 31-44 years old, the smallest number - in women over 66 years old. Glandular-fibrous endometrial polyps were more common in women aged 45-55 years old, less common in women under 30 years old. The largest number of fibro-glandular-cystic polyps of the endometrium was observed in women of older age groups - 66 years and older; the smallest number of these endometrial polyps - in women under 30 years old.

Conclusions. There is a tendency to increase the incidence of endometrial hyperplastic processes in the Sumy region for the period 2010-2020. There is a certain interaction between the frequency of this pathology in different ages. The reduction in morbidity in 2020 is due to quarantine measures in connection with the COVID-19 pandemic, and, as a result, a reduced number of diagnosed cases of endometrial hyperplastic processes.

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ROLE OF DOPAMINE RECEPTORS IN MECHANISM OF TALINOLOL INFLUENCE ON RENAL CIRCULATION, DIURESIS AND URINE SODIUM EXCRETION IN UNNARCOTIZATED RATS

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Introduction. β-adrenergic antagonists are used to treat a lot of cardiovascular diseases. Because development of cardiovascular pathology is commonly accompanied by chronic renal failure, investigation of β-adrenergic antagonist influence on the renal function is important. It is known that some β-adrenergic antagonists increase renal circulation, diuresis and sodium excretion and renal dopamine receptors take part in the mechanism of tubular and vascular effects of some drugs. These data were received in acute experiments on narcotizated animals.

Aim. The work aim was investigation of dopamine receptor role in the mechanism of talinolol action on renal circulation and urine sodium excretion in unnarcotizated rats in chronic experiment with water load to exclude anaesthesia influence on investigation data.

Materials and methods. Experiments fulfilled on 25 white male rats with mass 200-250g received standard foods and having free access to water. Preliminarily, the rats were operated to create microcystis to allow more correct urine collection. The rats were taken for experiments in 2 weeks after operation. Renal function was estimated under the background of 3% water load. Kallikrein was determined in urine by standard method. Sodium concentration was determined by flame photometry. All indicators were calculated on 100g of rat body weight. Talinolol was administered intraperitoneally in dose 1mg/kg. Dopamine receptor antagonist haloperidol (1 mg/kg) was administered subcutaneously.

Results. It has shown that haloperidol and talinolol combination has not to change renal function of unnarcotizated rats in comparison with result received for talinolol itself. Talinolol action itself on the unnarcotizated rats did not lead to significant change of diuresis volume and urine electrolytes excretion. Unreliable inhibition of renal excretion of sodium and potassium was observed at talinolol and haloperidol combination. The urination volume tends to decrease too. Glomerular filtration volume did not change reliably.

Conclusions. Experiments were found that dopamine receptors do not participate in the formation of investigated renal function indicators under the background of talinolol action.

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INFLUENCE OF HYPOPERFUSION ON THE EXPRESSION OF GLIAL FIBRILLARY ACIDIC PROTEIN IN THE SENSORIMOTOR CORTEX OF THE CEREBRAL HEMISPHERES AGAINST THE BACKGROUND OF PREVIOUS SENSITIZATION

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Introduction. Brain hypoperfusion leads to discirculatory changes in the cerebral cortex, which is accompanied by a reaction from the glia and changes in the expression of specific markers, including glial fibrillary acidic protein (GFAP) in astrocytes.

Aim. To study the expression level of glial fibrillary acidic protein in the sensorimotor cortex of rats under hypoperfusion conditions in the left carotid artery basin against the background of previous sensitization with brain antigen.

Materials and methods. The studies were carried out on 115 male white sexually mature Wistar rats weighing 260-290 g, which simulated hypoperfusion of the brain against the background of previous sensitization. The brain for research was taken 13, 15, 22, 42 and 102 days after sensitization with brain antigen, after excessive administration of sodium thiopental (200 mg / kg) to animals. We used histological, immunohistochemistry, densitometric and statistical research methods. An immunohistochemistry reaction for detecting GFAP was performed according to the manufacturer's protocol with a primary antibody to GFAP (Dako, Denmark). An EnVisionTM FLEX detection system (Dako, Denmark) was used to visualize the IHC reaction products. Every second section was additionally stained with Gill hematoxylin. As a positive control, we used rat brain samples with a certain positive reactivity, and for a negative control, the procedure was performed without the use of primary antibodies.

Results. Observations have shown that sensitization with a brain antigen causes neurodegenerative changes in the sensorimotor cortex and a moderate increase in the amount of GFAP + - gliocytes gradually increases. Against the background of sensitization with a brain antigen, hypoperfusion of the brain leads to an increase in the number of a glial cell, which are marked by GFAP. In the affected hemisphere, their number increases during the first three days, after which it decreases. But even 3 months after hypoperfusion, there is almost twice as much as in conventionally intact rats. This may be a factor that will significantly affect the function of brain regions after a vascular accident. A slight increase in the amount of GFAP + - gliocytes in the contralateral hemisphere suggests a certain systemic nature of the reactions of astrocytic glia to hypoperfusion. An early response to an increase in the number of marked astrocytes already a day after hypoperfusion suggests that some of this type of a glial cell do not express GFAP under normal conditions.

Conclusions. Sensitization with a brain antigen causes neurodegenerative changes in the sensorimotor cortex and an increase in the amount of GFAP+ astrocytes.
Sensitization with a brain antigen leads to a potentiated increase in the amount of GFAP+ - astrocytes in response to hyporerfusion in the cerebral cortex.

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CLINICAL MEDICAL SCIENCES

THE INFLUENCE OF CERTAIN FACTORS ON THE DEVELOPMENT OF CARDIAL PATHOLOGY IN CHILDREN WITH CHRONIC TONSILITIS

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Introduction. Chronic inflammation of the tonsils leads to a deterioration of local and general immunity, as well as the development of damage to other organs and systems of the child's body. One of the most common is non-inflammatory pathology of the cardiovascular system of tonsillogenic origin. The development of tonsillogenic processes in the body is due to both toxic-infectious, allergic effects of streptococcal infection, and certain risk factors for secondary lesions of the cardiovascular system on the background of chronic inflammation of the palatine tonsils.

Aim. The study was to identify the influence of certain factors on the development of cardiac pathology on the background of chronic tonsillitis in children.

Materials and methods. 45 children aged 13 to 18 years with a diagnosis of chronic tonsillitis, group I - 24 patients with chronic tonsillitis, group II - 21 patients with secondary cardiomyopathy and chronic tonsillitis were examined.

Results. The study: the pathology of pregnancy was significantly more common in mothers of children with secondary heart disease, in contrast to mothers of group I ((33.33 ± 9.83)% and (61.9 ± 9.87)% in groups I and II, respectively). It was found that (33.33 ± 10.54) % of children with diseases of the cardiovascular system were born to parents older than 35 years, while this figure in group I was (12.50 ± 6.90) %, ($p < 0.05$). In addition, the premorbid background (23.81 ± 9.52) % ($p < 0.05$) of children with tonsillogenic cardiomyopathies was complicated by parental cardiovascular disease. Analysis of the duration of breastfeeding showed that the majority of patients of group II had early artificial feeding - (57.14 ± 11.07) % against (33.33 ± 9.83) % among patients of group I.

Conclusions: In children with chronic tonsillitis and secondary cardiopathy, it was found that cardiovascular diseases of parents, late age of parents at birth (over 35 years), pathology of pregnancy and perinatal period, early breastfeeding were found in more patients compared to the group I. The presence of these risk factors in the history of patients with chronic tonsillitis may contribute to secondary heart disease, which should be considered in the diagnosis and treatment of patients with this pathology.

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INFLUENCE OF FILTERED BLOOD TRANSFUSION ON HLA SENSIBILISATION IN THE KIDNEY TRANSPLANT RECIPIENT

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Introduction. The human leukocyte antigen system, shortly HLA, is the most polymorphic genetic system in humans and represent the main immunologic barrier for kidney transplantation. Previous transplants, blood transfusions and/pregnancies may induce formation of antibodies against mismatched HLA molecules defined as HLA alloimmunization. It can cause allograft injury and may contribute to recipient morbidity and mortality.

Aim. We wanted to test how transfusions interact on the immunization process. Patients who are highly immunized face more graft rejection, shortened graft survival, longer waiting times on organ allocation programmes as they meet with difficulty and delay in finding an HLA compatible graft.

Material and methods. The awareness that leucocytes are the major cause of HLA immunization fostered the development of methods which reduce the leucocytes from blood samples. Due to clinical relevance of HLA specific antibodies serum samples from potential kidney recipients were screened every three months. The methods for determining the presence and specificity of HLA antibodies that we used were the Complement Dependent Cytotoxicity Assay and the Luminex method.

Results. The risk of immunization by transfusions has to be evaluated in the context of the immunologic history of the patient, as they are down-regulatory in naive recipients and stimulatory in patients previously exposed to alloantigens. Filtration is a method for leukocyte depletion and it removes 99.99% of leukocytes from blood unit. Every blood cell express HLA molecules, so even leukocyte depleted blood unit can elicit immune response and HLA immunization.

Conclusions. The most frequent sensitising events in potential kidney recipients are the blood transfusions. Avoidance of transfusions whenever is possible remains the key strategy as the risk of HLA immunization even from leukodepleted blood units, remains a significant risk.

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ACCIDENTS AND COMPLICATIONS RESULTING FROM NON-COMPLIANCE WITH ADEQUATE PROTECTION AT WORK

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Introduction. Accidents at work happen quite frequently in Romania, due to non-compliance with the protection rules and inattention, thus leading to unfortunate events and subsequent complications. Trauma-related accidents at work are a common cause of injuries having the most serious consequence partial or total limb amputation.

Aim. This study was conducted to investigate the incidence of work-related accidents according to their causes, the location and severity of the lesion, potential prognostic factors and the environment in which they mostly occur.

Materials and methods. We conducted a retrospective observational study on a total of 131,941 patients presented at the Emergency Unit of Sibiu in 2017 and 2018, using our means and frequencies to characterize and describe the susceptible population of risk most liable to limb accidents due to unforeseen work accidents.

Results. From the total number of 479 victims, in 2018 the number of cases decreased by 1,47% compared to the previous year. The likelihood of accidents was higher for males (85,17%) rather than females, coming mostly from an urban environment (56,78%) than from a rural one. The ages most affected by this type of accidents are those over 40 years old (57,82%), with the highest incidence of cases between 41-50 years old (23,18%). Injuries have been shown to occur, especially at the level of the upper limb (76,40%) rather than the lower one (23,38%) predominantly on the left side (58,03%), leading in the most severe cases to total amputations (59,67%).

Conclusions. The socio-demographic and occupational profile predominantly associated with work-related accidents include: male gender, age between 41 and 50 years coming from an urban environment, due to the predominance of the masculin gender in physical work with heavy equipment. The most common agents causing movement disturbance and injury at the upper limb level in these work situations were represented by the flex, the circular saw and the chainsaw, devices that are especially handled by men. The most frequent types of limb lesions were excoriations, contusions, open and closed fractures and amputations. From one year to another the number of work accidents decreased by an almost insignificant percentage, but one who helped Romania to position itself on the second rank at European level in case of work accidents, after 4 years ranking constantly on the first place.

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THE RELEVANCE OF MALIGNANT NEOPLASMS OF THE PROSTATE IN THE SUMY REGION

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Introduction. Cancer of the prostate is a malignant new solution, as a result of the alveolar-cell disease. One of the topical problems of complicity is the new solution to the problem of death before the death of the fourth month in Ukraine. For the first time, 370 thousand copies of the malignant new establishment in front of the throat zone are diagnosed.

Aim. To investigate the frequency and stages of prostate cancer in Sumy region

Materials and methods During the survey, the history of prostate cancer patients in Sumy region for 2020 and the analysis of scientific sources using the scientific metric database of published databases Google Scholar were studied.

Results. In 2020, 168 people were registered in Sumy for prostate cancer. 29 patients were diagnosed with prostate cancer for the first time, which is 17.3%. Among the identified patients with stage I-II prostate cancer, 105 patients were diagnosed, which is 66.2%. Stage III - in 57 patients 13.3%. In 6 patients stage IV cancer was detected, which is 20.7%. In 2020, 4 men died, which is 2.3% of the total number of patients with prostate cancer

Conclusions. Thus, a malignant neoplasm of the prostate tends to grow. Due to the reduced screening examination and not pronounced symptoms of the disease, the growth of patients is constantly increasing. Timely examination and diagnosis of the risk group for prostate disease increases the overall quality of life and reduces the progression of prostate cancer.

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EPIDEMIOLOGICAL FEATURES OF CONGENITAL GENITOURINARY ABNORMALITIES IN UKRAINE

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Introduction. Congenital Genitourinary Abnormalities (CGA) are birth defects that are very common and predispose patients to many complications, including infection, obstruction, stasis, calculus formation, and impaired renal function.CGA may lead to nephrotic syndrome, acute kidney failure, or chronic kidney failure. CGA often have poor birth outcomes owing to the limited experience of physicians in developing countries regarding antenatal and postnatal diagnosis.

Aim. This study aimed to evaluate trends in the incidence and features of epidemiology for CGA among children under the age of 1 year for the period between 2014 and 2020 in Ukraine.

Materials and methods. The population-based case-control study design was conducted using the data of Center for Health Statistics (Ministry of Healthcare of Ukraine) and State Statistics Service of Ukraine, which contains detailed information about children's health supplied by health professionals. The data of children under the age of 1 year delivered between 2014 and 2020 were collected for this retrospective study. Children with renal hypoplasia, polycystic kidney disease, ureteropelvic junction obstruction, and other kidney disorders were classified as having congenital anomalies of the kidney and urinary tract (CAKUT). Hypospadias, indeterminate sex, and undescended testicles (UT) were included as genital anomalies. The resultant trends were described by the Average Annual Percentage Change (AAPC). The AAPC was estimated using the slope of the linear trend line fitted to the incidence rates by year of diagnosis.

Results. During the study period (2014–2020), there were 10 704 cases of CAKUT were reported, an average incidence of 4.33 (standard error (SE) – 0,12) per 1000 children under the age of 1 year. The sex ratio (boys/girls) was 1.7. There were 5 185 cases of UT, an average incidence of 2.11 (SE – 0,03) per 1000 children under the age of 1 year. The age-standardized incidence of CAKUT was 4.22 in 2014, 4.35 in 2015, 4.56 in 2016, 4.93 in 2017, 4.21 in 2018, 4.0 in 2019, 4.01 in 2020 (cases per 1000 children under the age of 1 year). The age-standardized incidence of UT was 2.2 in 2014, 2.08 in 2015, 2.02 in 2016, 2.01 in 2017, 2.09 in 2018, 2.24 in 2019, 2.11 in 2020 (cases per 1000 children under the age of 1 year). The age-standardized incidence of CAKUT and UT remained stable (CAKUT AAPC: - 0,00851%; UT AAPC: - 0,00696%).

Conclusions. In this study, we found that the rate of overall CGA incidence remained stable over the study period in Ukraine.

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APPLICATION OF NANOCRYSTALLINE HYDROXYAPATITE IN THE TREATMENT OF PURULENT INFLAMMATORY DISEASES

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Introduction. Purulent-inflammatory diseases, including trophic ulcers (TU) of the lower extremities, are an essential problem of modern surgery [1], because according to statistics, 1-3% of the population have TU of venous origin [2], and the cost of treatment is 1% of the protection budget health in Western countries [3].

Aim. Study of the effect of hydroxyapatite and zinc oxide on the purulent process, healing of TU.

Materials and methods. The proposed biocomposite apatite - polymer drainage dressings (APDD) can be used to treat patients with TU of venous or arterial origin, including due to microcirculation disorders in diabetes. APDD is a macroporous three-dimensional grid - a matrix with a thickness of 7–10 mm, obtained by multistage synthesis, which includes ultrasonic homogenization of the suspension of the initial components (calcium deficient hydroxyapatite, zinc oxide, sodium alginate) with the subsequent sublimation process. Due to its components, APDD has properties inherent in hydrophobic and hydrophilic sorbents, as well as anti-inflammatory, detoxifying and bactericidal properties, stimulates fibroblast proliferation, angiogenesis of capillaries and lymphatic vessels, improves and accelerates tissue regeneration.

Results and conclusions. According to the results of clinical observation of 17 patients treated by us on the basis of the Department of Vascular Surgery SRKH Sumy, the following conclusions can be drawn: 1. In the treatment of patients with TU, it is advisable to use APDD, effective improvement and restoration of objective indicators without the use of antibacterial drugs. 2. The use of APDD is accompanied by a decrease in local pain, nocturnal pain in the calves, edema, peripheral hyperemia, wound exudation, heaviness in the affected limb, improved foot function and accelerates the healing time of the ulcer defect.

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STRUCTURAL CHARACTERISTICS OF REGIONAL INFECTIOUS HOSPITAL PATIENTS', SUFFERING FROM COVID-19, DUE TO THEIR AGE AND SEVERITY OF DISEASE PROCESSING DURING 2020 - 2021

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Introduction. Coronavirus SARS-CoV-2 represents the new virus type that quickly extended to the whole world, causing the epidemic disease, called Covid-19. (Liu J. Et al., 2020). The appearance of Covid-19 created hard tasks for all specialists in the sphere of healthcare. The mentioned tasks are connected with fast diagnostics and clinical care of patients, which were confirmed to be ill on Covid-19. Many problems of epidemiology, diagnostics, clinics and curing of this infection stay to be contradictory and poorly investigated. (Nikiforov V.V., 2020; Zadorogna V.I., 2020).

Aim. The main aim of our research is to investigate hematological, biochemical and immunological indicators, it's peculiarities and age, sex, concomitant pathologies correlations.

Materials and methods. The analysis of the medical histories of sick on Covid-19 patients was conducted, which had been cured in the Volyn regional infectious hospital during 2020–2021 years. In general 2592 people were cured. The statistical part of male patients is – 1005, of female patients - 1493, of children - 94. There were 52 girls and 42 boys among these children.

Another important step of this research was the processing of on Covid-19 sick people groups, which were divided by us into 3 groups according to the following criteria: patients without concomitant pathology, patients with some concomitant pathology and patients with fatal cases. The control group, which consisted of 33 persons, was represented by patients with pneumonia but without Covid-19.

Analysis of this research results can testify that the dominating majority of patients are people of old age. The fatal cases fold 4,2% and 95,8% of patients recovered. Women appeared to fall ill with Covid-19 more often than men. The group of examined patients is structured depending on the type of concomitant pathology.

Results. In the process of this research the structural characteristics of patients with Covid-19 was defined. Another point is the establishment of peculiarities of hematological and biochemical pointers among the patients with Covid-19 due to different age groups, depending on concomitant pathology. The got results allow us to improve the diagnostic's effectiveness and to work out the criteria of disease-flowing prognostication.

Conclusions. Finally, generalizing the above-mentioned information, the following conclusion can be made, that the largest part of with Covid-19 ill patients constitute men and women of age till 60 years, besides the smallest part represent patients, whose age is above 70. Frequencies of lethal cases, caused by Covid-19, prevail among the male humans, regardless of age.

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LACENTA MORPHOLOGY AFTER POSTPONED COVID-19

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Introduction. COVID-19 in pregnant women is a threat not only to the woman, but also to the fetus. In this aspect, special attention is drawn to the state of the placenta, which provides a connection between the mothers' – fetus organisms.

Aim is to assess the morphology of the placentas after mild to moderate COVID-19 suffered by women in labor during the I-II trimesters of pregnancy.

Materials and methods. Histological examination was carried out on 51 placentas obtained after childbirth in women who had undergone mild to moderate COVID-19 during the I-II trimester of pregnancy, who gave birth to alive children. We also examined 7 placentas obtained after childbirth from healthy women (control).

Results. Placental morphology after COVID-19 in pregnant women shows significant variability. In 12 cases, the structure of the placenta practically did not differ from that observed in the control. In other cases, hypertrophy and fibrosis of the maternal vessels, which passed in the placenta septa, was found, from insignificant to expressive. It was often accompanied by fibrotic changes and thickening of the septa. There was a slight, and sometimes expressive, usually focal, inflammatory infiltration of septa. Histiocytes were predominant in their cellular composition.

Chorionic microscopy was revealed an increase in the number and size of syncytial nodes of the trophoblast. The inflammatory infiltration of the trophoblast villi could not be visually unambiguously determined. Hyperplasia of the walls of the chorionic arteries was observed in about half of the placentas after COVID-19. In some cases, fibrin deposits could be observed between the villi. In 3 cases, thrombosis of individual vessels of the fetal part of the placenta was observed.

Conclusions. Placentas after a pregnant woman suffered from COVID-19 of mild to moderate severity often have pathological changes. Most often, the vessels of both the maternal and fetal parts of the placenta are affected, fibrous changes in the septa occur, and the nutrition of the fetus is disturbed.

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NON-PSYCHOTIC MENTAL DISORDERS AND SUICIDAL RISK IN PERSONS LIVING WITH HIV (PLWH). LITERATURE REVIEW

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Introduction. There are over 30 million PLWH nowadays, and due to advances in HIV treatment, it is a chronic and manageable medical condition. Anxiety and depression are clinically crucial for PLWH because they affect their quality of life, sleep patterns, adherence to antiretroviral therapy (ART), cognitive function and can weaken patients' immune systems.

Aim. Review of recent studies.

Material and methods. Using databases Pubmed, Scopus.

Results. The frequency and severity of depression and anxiety in PLWH is significant and exceeds 3.4-4 times the corresponding indicators of the healthy Ukrainian population. Depression, in particular, is common among PLWH, with an estimated prevalence of 20% to 40% PLWH. Apathy is common in HIV, separable from depression, and has been associated with non-adherence to ART. Numerous studies have reported that post-traumatic stress disorder (PTSD) rates are disproportionately higher in PLWH than in the average population. The prevalence of generalized anxiety disorder (GAD) and PTSD is estimated at the rate of 16% and 10-74% correspondingly, compared with 2% and 8% among the average population.

The dependence between GAD, PTSD and an HIV diagnosis may be stronger in adults over 65 than 50-64 years old. Psychiatric comorbidities may serve as significant predictors of suicide risk among PLWH. About 21% of PLWH report suicidal ideation, a complete 5% report a past-year suicide attempt, and 1-2% die by suicide. The peak of suicidal ideation and attempts occurs approximately 1-2 years after diagnosis.

Conclusions. The relevance of further in-depth investigation to the mechanisms for the formation of non-psychotic mental disorders among PLWH is substantiated.

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THE INFLUENCE OF BRONCHOMUNAL ON THE COURSE OF BRONCHITIS IN PRESCHOOL CHILDREN

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Introduction. Bronchitis has a large share among respiratory pathology in children and accounts for about 1/4 of all recurrent and chronic respiratory diseases. Bronchitis is one of the most common respiratory diseases in children. Children with recurrent bronchitis (RB) make up almost 30 % of all patients with respiratory diseases. The prevalence of RB in children is 2.5 per 1000 children aged 1–15 years; among children under 3 years of age, 2.3% are ill, preschoo l – 7.1 % and 2.6 % – school-age patients. Today, recurrent bronchitis, according to the Order of the Ministry of Health of Ukraine, is defined as bronchitis, episodes of which recurrent 2-3 times a year and more often for 1–2 years on the background of acute respiratory viral infections (ARI). In children, frequent manifestations of RB lead to a decrease in the body's defenses, suppression of immunity. One of the drugs in such conditions is "Bronchomunal". It has an immunostimulatory effect on the body indirectly, by increasing the production of interleukins, namely IL-1, IL-6, IL-12, the production of antibodies against the main pathogens of acute respiratory viral infections.

Aim. The aim of our work was to study the effect of the drug "Bronchomunal" on the course of this pathology among children and the frequency of recurrences of bronchitis.

Materials and methods. Under observation were 38 preschool children with recurrent obstructive bronchitis, who were ill more than 3 times a year for this pathology and were hospitalized in the city children's hospital in Sumy. This group of children received traditional therapy according to the treatment protocol of the underlying disease and along with the drug immunomodulator – "Bronchomunal".

Results. As a result of our observations, it was found that children who was along with traditional treatment during the exacerbation of the disease, as well as after discharge from the hospital received this drug for another week in an outpatient setting. This drug contributed to faster clinical recovery of patients (reduced signs of obstruction, dry wheezing on auscultation over the lungs). Such children after recovery felt well and shortened the period of re-consultation with a doctor about this disease.

Conclusions. Thus, given the immunomodulatory effect of "Bronchomunal" on the body, by increasing the activity of phagocytes, T and B-lymphocytes, stimulating the synthesis of antibodies and cytokines, increasing the cytotoxicity of lymphocytes, it is advisable to use a long course of this drug in children diagnosed with recurrence.

Therefore, we can assume that immunomodulatory drugs are effective at all levels of the immune response, both in the acute phase of the disease and in long-term immunotherapy, especially in frequently ill children.

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CONSERVATIVE TREATMENT OF SPLEEN INJURIES IN CHILDREN

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Introduction. Spleen injuries account for up to 30% of injuries to the abdominal organs in children. Until recently, surgery with splenectomy has been the only method-of-choice of treating spleen injuries. The risk of early and late postoperative complications, including post-splenectomy, requires implementation of conservative methods of treatment.

Aim. The analysis of the experience of using the conservative approach in treatment of spleen injuries in children.

Materials and methods. The results of treatment of 21 children (16 boys and 5 girls) aged 5-16 years with spleen injury have been analyzed. Home accident caused spleen injury in 3 (14.3%) patients; in 6 (28.6%) patients spleen injury was caused by sport trauma and in 5 (23.8%) patients by the bike wreck; spleen injury in 7 (33.3%) children was caused by trauma from car accident and they also had combined trauma (traumatic brain injury, bone fractures). All patients were hospitalized within 3 to 36 hours after injury. At the time of hospitalization, the general condition, objective data, hemodynamic parameters, hemogram parameters, radiography data, ultrasound examination, computed tomography were evaluated. In all children, ultrasonography revealed damage to the spleen of I-II degree and signs of hemoperitoneum. Ultrasonography revealed the volume of free fluid in the abdominal cavity ranged from 50 to 270 cm3. In 14 children, damage to the spleen was detected by computed tomography.

Results. All patients with spleen injury received conservative treatment, including hemostatic, antibacterial and infusion therapy. The condition for the use of conservative tactics was the stability of hemodynamic parameters, as well as the lack of clinical and laboratory data indicating continuous intra-abdominal bleeding. The tactics of "armed waiting" consisted of continuous monitoring of hemodynamic parameters, hemogram parameters, daily ultrasound monitoring and determination of the volume of free fluid in the abdominal cavity. No two-phase ruptures of the spleen were found. In all children on day 5-9 the symptoms of peritoneal irritation regressed, the free fluid in the abdominal cavity was resorbed. The subsequent ultrasound control revealed cicatricial alterations at the site of injury; posttraumatic cyst was developed in one child.

Conclusion. Conservative treatment of spleen injuries is indicated for patients with stable hemodynamic parameters and no signs of continuous intra-abdominal bleeding, provided in the specialized surgical hospital unit with continuous multidisciplinary monitoring.

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THE PREVALENCE OF ENDOMETRIOSIS IN NIGERIA

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Introduction. Endometriosis is the presence of endometrial cells growing outside the uterus and is characterized by excessive pain especially during the menstrual period. It is largely prevalent in women within the reproductive age of 25 and 35 but has been shown to affect women of all ages and ethnic backgrounds. In Nigeria, it is alleged that 30-40% of women suffer from endometriosis. Multiple studies have been carried out within different periods to ascertain the rise of endometriosis in Nigeria. During a study at a centre in Ibadan, Nigeria, only 85 cases of endometriosis were diagnosed in the period of 1st January 1997 to 1st October 2018. The mean age affected was 35 years (ranging from 18 to 52 years). The age groups most affected were between 30-39 years (47.1%) and 20-29 years (30.6%). The ovary (58.8%) was found to be affected more than the umbilicus (11.9%) and fallopian tubes (9.4%).

Aim. To describe the prevalence and clinical presentation of endometriosis in Nigeria.

Materials and methods. Literature from PubMed, Google Scholar and Medline were used. Found sources having the words "endometriosis" and "Nigeria". From this search, a total of 42 papers were found but only 7 papers were relevant to the criteria of this review which is a laparoscopic diagnosis of endometriosis done in Nigeria and identifying clinical peculiarities associated with the occurrence of endometriosis.

Results. According to the materials gathered, out of 239 women analysed in the year 2008 – 2010 at a centre in Ibadan, Nigeria, 48.1% (115 women) were diagnosed with endometriosis and when 490 infertile women were examined in 2006 -2008 Nnewi, Nigeria, endometriosis was found in 4.9% (24 infertile women). It was also concluded that endometriosis was more common among women experiencing dysmenorrhea and pelvic pain. A study done among the Igbos in Nigeria states that 90.8% of cases were not diagnosed until an operation was carried out. Another study shows that women in Nigeria, that are < 35years with a normal BMI of 18.5-24.9 has an increased probability of endometriosis than women >35 years. Out of 113 women diagnosed with endometriosis at a fertility clinic in Nigeria, primary infertility was more prevalent than secondary infertility by 62%. Among Nigerian patients treated within 5 years, only 23 patients (between 24 and 45 years) were diagnosed and treated for Thoracic Endometriosis Syndrome (TES), and it was found that severe dysmenorrhea was significant in 91.3% of the cases.

Conclusions. Although these studies are instrumental in analysing the prevalence of endometriosis in Nigeria, this result cannot be said to be encompassing Nigeria totally because they are limited to the geographical area where the study was held. This research does show that Nigerian women are significantly affected, with dysmenorrhea, severe pelvic pain and primary infertility being clinically relevant for proper diagnosis. Regular gynaecological checks should be normalized, especially for women <35 years and efforts should be made to increase awareness among the public, researchers and clinicians. Differential diagnosis should include endometriosis which may present as TES.

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ANALYSIS OF TURNER SYNDROME (TS) ON CHILDBIRTH

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Introduction. Turner syndrome is genetic disorder affecting girls and women. Although it is a genetic disorder, it's not usually inherited except in rare cases. The cause is a completely or partially missing X chromosome. It is characterized by short stature, ovarian failure and cardiac defects. Pregnancies in women with TS are rare and mortality rate is on a high level due to cardiovascular disease.

Aim. To analyze and compare childbirth outcome in women with TS and women in the general population, describing characteristics of newborn with TS, evaluation of obstetrics and neonatal outcomes in women and knowing if morbidity increased after delivery.

Material and Methods. For the study, 115 women with TS were analyzed and compared with a reference group of women from the general population.

Results. A total of 115 women with TS karyotype gave birth to 208 children. Women with TS gave birth to fewer children than the reference group. No maternity mortality and no miscarriages registered. More TS women had preeclampsia during their first pregnancy. A lady suffered from aortic dissection in week 32 of gestation but she and the baby survived. In children of women with TS karyotype, gestational age was shorter, preterm delivery was more common, birth weight of children were lower, more children of TS women were delivered by cesarean section than in the reference group, mortality rate in women of TS group were 1.5% (three of 202, 1 stillbirth and 1 neonatal mortality and 0.9% in reference group. Birth defects were 4.5% in the TS group and 3.8% in the reference group. Congenital cardiovascular defects are a common problem in women with TS.

Conclusion: Obstetrics outcomes in women with TS karyotype were mostly favourable with shorter gestational age but similar size of birth. TS women with spontaneous pregnancies being predominantly mosaics may represent a healthier group of women but more neonatal risks. Women with TS are recommended adequate counseling, prepregnancy cardiac screening and close surveillance before, during and after delivery.

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COMORBIDITY OF METABOLIC SYNDROME AND ATRIAL FIBRILLATION: FEATURES OF MANAGEMENT

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Introduction. The metabolic syndrome (MS) consists of pathological changes as diabetes, hypertension, obesity, and dyslipidemia, most of them also have been founded in the pathogenesis of atrial fibrillation (AF). However, the role of the MS in the development of AF was not detected.

Aim. To explore the clinical features of the comorbidity of MS and AF, impact of the MS on the severity of AF and suggest the possible management approaches.

Material and methods. We conducted a randomized study: 186 patients were enrolled in the Sumy Region Affair Hospital, among those patients 79 (42.47%) had paroxysmal AF and 108 (57.53%) had permanent AF. They were divided into two groups: group A - 86 patients (46.23%) with AF and MS, and group B - 101 patients (53.77%) with isolated AF. Our patients have been subjected to physical examination, blood tests (glucose, lipid profile), 12-lead ECG and EchoCG. The authors had full access to and take full responsibility for the integrity of the data.

Results. It was not found a significant difference in the prevalence of hypertension between group with MS and group without MS, while there is a significant difference in prevalence of other variables, such as overweight/obesity, hypertriglyceridemia, hyperglycemia, and low HDL-C ($p<0.05$). It was detected that AF severity could be controlled by treatment of metabolic syndrome, including lifestyle modification, metformin 1000 mg/day and atorvastatin 80 mg/day ($p<0.05$).

Conclusions. MS is associated with increased risk of permanent AF. Correction of metabolic risk factors can help to control AF.

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INSOMNIA AMONG COVID-19 FULL RECOVERED PEOPLE

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Introduction. Insomnia, also known as sleeplessness, is a sleeping condition where people have difficulty sleeping. It may be difficult for them to fall asleep or remain asleep as long as needed. Daytime sleepiness, low energy, irritability, and a depressed mood are usually accompanied by insomnia. Some studies showed that COVID-19 patients can suffer from insomnia during their infection period and they attributed it to the stress and depression experienced by the patients during the disease.

Materials and methods. It is cross-sectional study that includes 1215 participants from 15 counties. The inclusion criteria were a recovered patient from COVID-19 with no history of psychological disorders of depression, anxiety, stress or insomnia or any sleep disorder. Athena's Insomnia Scale was used in diagnosis of Insomnia with score of ≥ 6.

Results. The insomnia score of the patients was with mean and standard deviation of 7.04 ± 4.9, although 77.6% of them were with score ≥ 6 as they have insomnia, while 22.4% have not.

There was a significant difference between the severity of the symptoms and the insomnia status with P-value of 0.047. About one third of them visited a doctor because of their sleep quality and 29% of them took medications to help them to take enough sleep.

Conclusion. Insomnia can be common after COVID-19 infection and it can sever in many people and may need treatment and follow-up. People from countries that have bad health care and the elderlies have an increased risk of having insomnia after COVID-19 infection.

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CONCENTRATION OF INTERLEUKIN-4 IN SCHOOL AGE CHILDREN WITH COMMUNITY-ACQUIRED PNEUMONIA

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Introduction. The leading role in the regulation of the immune response in pneumonia is given to specific mediators of the immune response - cytokines. The clinical picture and features of pneumonia directly depend on the level of production of anti-inflammatory cytokines and their effect on immunoregulatory and effector immune mechanisms.

Aim. In order to study the role of cytokines in the formation of the inflammatory process in pneumonia, we determined the concentration of anti-inflammatory interleukin-4 (IL-4) in the serum of children with community-acquired pneumonia (CAP).

Materials and methods. Determination of interleukin-4 concentration was performed in 45 children with pneumonia aged 6 to 18 years, who were treated in the infectious department of the Children's Clinical Hospital in Sumy. The comparison group consisted of 19 healthy children.

The study was conducted in the acute period of the disease and in the period of stable improvement and discontinuation of antibacterial therapy. The results of studies obtained in children with CAP were compared with similar indicators of healthy children.

Analysis of the data showed that in the acute period of the disease, the level of IL-4 was increased 2.5 times in children with moderate to severe disease. Elevated levels of IL-4 were observed in 77.5% of sick children. In others, 20.5% of children, the level of IL-4 was significantly lower (143.4%), and in 8.2% of children the level of this cytokine did not differ from normal. Thus, the level of IL-4 in the serum in the acute period of severe disease was increased 2.8 times, while in moderate severity 2.6 times from that of healthy children.

Results. After treatment, during the convalescence of the disease, the level of IL-4 also decreased, but the rate of its reduction was much lower - only 18%, which is 2.2 times higher than in healthy children.

Such more pronounced changes in IL-4 production in children with severe disease during convalescence may indicate that the activity of the inflammatory process, even in the absence of clinical manifestations, continues, especially in children with severe disease that requires further medical supervision. This allows us to consider the increased level of the above cytokines as one of the criteria for the activity of the inflammatory process.

Conclusions. The severity of the disorders depends mainly on the severity of the disease and does not depend on the age and sex of the child. Normalization of the revealed disturbances of interleukin-4 after the carried-out standard treatment does not come. This should be taken into account when developing optimal treatments and rehabilitation measurecommunity-acquired pneumonia in children.

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LIVED EXPERIENCES OF PATIENTS WITH CORONARY ARTERY DISEASE (CAD)

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Introduction. Coronary artery disease (CAD) is amongst the chief causes of mortality and morbidity in the developed and developing countries. The researchers till date have focused on the risk prediction and management of patients with CAD. However, there is dearth of information on the facets of the effects of disease and emotions of such patients.

Aim. This study intended to delineate the lived experience of patients with CAD to stipulate a valid guide for health professionals.

Materials and methods. A descriptive phenomenological study was carried out, including eight patients of CAD who were hospitalized in intensive care units (ICUs) and cardiac care center of Victoria Hospital, Mauritius. The data were collected using semi structured and in-depth interviews. The recorded data were transcribed and analyzed by thematic analysis to deduce meanings and concepts.

Results. The results devised from the interview of the patients revealed that most of them started living with insecurities and fear thus losing their peace of mind and they strived to spirituality to attain it. They were not able to perform the intense workout that they use to perform which lead to losing of active life. The patient also started to follow lifestyle modifications so as to promote sound health and they were completely supported by their family members.

Conclusions. An event of CAD is an experience with multifaceted influences on numerous aspects of the patient's life. This study illuminated the emotional bearing of those patients who were living with heart disease. Patients expressed their sufferings, insecurities and loss of control on various aspects of their lives. The health professionals need to develop empathy to address the emotional needs of such patients and be specially trained to provide counseling, emotional support and exceptional care to such patients.

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THE PROBLEM OF DRINKING TOO MUCH WATER

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Introduction. Water is a significant piece of the human body. As it comprises around 60% of the body weight, as well as having numerous large capacities in all cells, tissues, and organs of the body and body liquids work in many capacities, like processing, supplement transport, and keeping a temperature For the body.

Aim. Shedding light on how water poisoning occurs.

Materials and methods. Theoretical analysis of medical scientific publications that were found in local and foreign specialized medical sites.

Results. Excessive drinking may lead to severe consequences, the most important of which is water poisoning, which is a condition of brain function that occurs when drinking a lot of water, which leads to the reduction of salts in the blood, especially sodium, so its concentration becomes less than 135 mmol/l, and this condition is called hyponatremia, so the concentration inside the cells becomes higher compared to the outside, so the fluids move from the outside to the inside of the cells, causing them to enlarge. when brain cells become larger, the pressure on the skull increases, which can cause headaches, nausea, and vomiting. In severe cases, more serious symptoms may occur, such as high blood pressure, diplopia, dizziness, difficulty breathing, muscle weakness and cramps, brain damage, coma, and eventually death.

Unknown exactly how much water can lead to water poisoning. It is desirable to overthink about it as far as how much water somebody devours every hour. The age, sex, and general soundness of an individual would all be able to assume a part. A sound grown-up's kidneys can siphon out 20 to 28 L of water every day, in any case, they can dispose of around 1 L each hour. At the point when you drink more than 1 L every hour, your kidneys battle to keep up. Since the kidneys of older people and kids are less proficient, the measure of water they can securely drink every hour might be marginally lower.

Conclusions. Liquids are found inside and outside the cells of your body. The levels of these liquids ought to be steady. Taken together, about 40% of the body weight comes from fluid inside the cell, and 20% of the body weight comes from fluid outside the cell. Electrolytes in the body maintain balance in and out of cells.

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THE IMPORTANCE OF BLOOD TRANSFUSIONS IN THE EMERGENCY DEPARTMENT

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Introduction. Blood transfusion became a relatively practicable procedure and one of the most commonly therapies used in the Emergency Department for various acute pathologies potential life threatening.

Aim. This study was conducted to investigate the incidence and particularities of blood transfusions in the Emergency Department, according to their causes and frequency, the predominant ages and the area where the patients are living.

Material and methods. We led a retrospective observational study on a total of 131,941 patients presented at the Emergency Department of Sibiu in 2017 and 2018 establishing the pathologies most liable to this type of treatment, the people at risk and their particularities.

Results. Out of the total of 524 people transfused in the 2 years, the female predominance was of 54.96%, out of which 69.08% came from urban areas than from rural ones. Analysing the most important transfused pathologies, anaemias still occupy the first position with 35.87%, having as the most popular form the iron deficiency anaemia (22.87%), followed by upper digestive haemorrhages (26.71%), cancerous tumours (20.03%) when trauma only occupy 7,06%. The ages most affected to this procedure are those over 60 years (72.9%), with the highest incidence of patients over 70 years (46.75%).

Conclusions. Just as literature studies show, iron deficiency anaemia is still the most common anaemia in the Emergency Department and the one for which most transfusions have been performed. There are no significant differences between the two genders, but there is an important one between urban and rural environments due to risk factors such as stress, diet, obesity, pollution, sedentary lifestyle. Older people over the age of 70 are the most common candidates for blood transfusions followed closely by those between 61-70 years and still being a low need for blood transfusions for young people. Upper digestive haemorrhages are one of the most frequently transfused pathology because patients come to the Emergency Department with dramatic symptoms. In the same time, a very small number of trauma cases have been transfused, which still indicates that there is no habit of using blood transfusions in trauma, although they can increase the survival rate. What can we can more emphasize, is that an adequate screening could determine a better management of the chronic pathologies, who could not reach the Emergency Unit for transfusions.

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UTERINE MYOMA AS A CAUSE OF INFERTILITY

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Aim. Analyze literary sources on the issues of etiology and pathogenesis of leiomyoma uterus in Ukraine and abroad, modern methods of treatment and influence of this pathology on the fertile possibilities of women of reproductive age.

Material and methods. The study was conducted by analyzing and semantics of selected literature.

Results. During the study, a sorting and analysis of 40 sources of domestic and foreign literary resources regarding the problem of infertility due to leiomyoms of the uterus in fertile women. Among all gynecological diseases, the incidence of leiomyoms of the uterus according to various sources varies within 25-55% in women with fertile capabilities. Most often, myoma occurs after 35 years. But recently, there is a tendency to identify this pathology in young women aged 20-25 years analyzing modern literary sources to conclude that the leiomyoma is the cause of infertility in 20-30% of reproductive age women and is the cause of non-pregnancy in 15-30%.

Conclusions. Leemioma of the uterus is an actual problem in gynecology. There is an increase in indicators of detection of this pathology in women with unrealized reproductive function. Optimal directions for the elimination of pathology are the improvement of pharmacotherapy and the use of new techniques of operational treatment (organ-saving surgical intervention, EMA, MRI Fuz). These two methods in combination have fairly good indicators of elimination of pathology and preserving the reproductive health of a woman having leiomyoma uterus.

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USING THE PFANNENSTIEL SUPRASYMPHYSÄRE FASCIENQUERSCHNITT TO REDUCE THE INCIDENCE OF POSTOPERATIVE VENTRAL HERNIA

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Introduction. The incidence of postoperative ventral hernia (PVH) after midline laparotomy range from 3 % to 20 %. It is one of the most common conditions requiring major surgery and it is a source of morbidity and requires high healthcare costs. In order to avoid this type of hernia, in 1900 a German gynecologist Hermann Johannes Pfannenstiel described the suprasymphyseal fascia crosscut laparotomy technique. The promising career of this remarkable man was tragically cut short in age of 47 years. He pricked his finger during the operation on a patient suffering from a tubo-ovarian abscess and some days later died of sepsis, repeating the fate of the Hungarian gynecologist Ignaz Zemmelweiss. Now the incision that bears his name is the incision of choice for a variety of gynecological and surgical operations. An aesthetically more pleasing «bikini-line» and less postoperative complications are mentionaed as additional advantages of this technique.

Aim. To determine the prevalence of incisional hernia in patients with a low transverse Pfannenstiel incision compared to traditional lower midline laparotomy.

Materials and methods. 186 adult women, operated between January 2015 to December 2019, were studied for development of PVH. The kinds of the operations were different (caesarean section, abdominal hysterectomy, ovarian cystectomy, ectopic pregnancy, myomectomy). Their ages ranged from 18–58 years with mean age 34 ± 2,8 year. All patients were randomized into 2 groups. In 90 (48,4 %) patients of the first group, the lower median laparotomy was used, and in 96 (51,6 %) of the second group – the Pfanenstiel incision. PVH developed in 12(13,3 %) of patients of the first group and significantly less – in 1(1,04 %) of the second group ($p < 0.05$).

Conclusions. The Pfannenstiel incision is characterized by a significantly lower incidence of postoperative ventral hernia, besides it's cosmetically more acceptable than the lower midline incision and should be more widely introduced into gynecological and surgical practice.

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THE MORPHOLOGICAL CHARACTERISTIC OF CERVICAL INTRAEPITHELIAL NEOPLASIA WHICH IS ASSOCIATED WITH HUMAN PAPILLOMAVIRUS INFECTION DEPENDING ON TYPE OF FEMALE INFERTILITY

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Introduction. Nowadays the role of viral infections in the etiology of chronic women's inflammatory disease and development of female infertility is actively investigated and studied in many countries. The human papillomavirus (HPV) attracts a lot of attention, because it occupies one of the major positions in development of female genital diseases.

The aim of the study is to establish the prevalence of HPV infection in women with different forms of infertility and identify the pathomorphological features of cervical intraepithelial neoplasia.

Material and Methods. In research were used clinical data (results of colposcopy) from inpatient and outpatient charts of 157 women with CIN, the real-time PCR for detection of viral DNA HPV with high carcinogenic risk (HCR) and morphological (histological, histochemical, immunohistochemical) methods.

Results. The initiating factor in the development and progression of neoplastic transformation of the cervix in women with infertility should be considered HPV of WRC, as evidenced by the significant advantage (62,8%) infected patients and increase the frequency of detection of HPV by increasing the degree of severity of CIN. Hormonal and uterine infertility accounted for the same proportion – 22,2%. Characterized by the lowest rate trumpet and combined infertility. These forms also form the same proportion (11,1%). When focal and diffuse expression levels observed prevalence of tubal infertility, which is respectively 44,4% and 52,9%. In CIN II, CIN as in-and the highest rate of negative expression $p16^{ink4a}$ belongs peritoneal infertility. Tubal infertility also prevails in the focal and diffuse expression of the marker, and is respectively 61,8% and 50,0%. Unlike CIN-I, in the group increases the proportion of patients with combined infertility, which is 25.0%. When CIN-III at 100,0% observed positive dysplastic epithelium on $p16^{ink4a}$ expression. Among the types of infertility installed in patients with severe dysplasia dominated tubal infertility.

Conclusions: By colposcopy examination clinical form of infection with human papilloma virus is observed in 31.6% of women with infertility. Other colposcopic signs of HPV infection are non-specific, because there are signs of cervical intraepithelial neoplasia. The presence of genital warts in 13.6% of women can be seen as cervical factor that can prevent fertility except the specified type of infertility in patients.

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CLINICAL CASE OF PROVIDING DORSAL ONLAY BUCCAL MUCOSAL GRAFT URETHROPLASTY

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Introduction. Patient B. (53 y.o.) had complaints of difficulty of urination, lower abdominal pain, treatment of BPH and prostatitis in the anamnesis. The above complaints were put forward for several years in a row. Prior to hospitalization, he received treatment – multiple bougieing of the penile urethra for urethral stricture.

Aim. To describe the technique of using elaborate highly qualified urosurgical procedure.

Materials and methods. During a comprehensive examination, the diagnosis was made and adequate surgical treatment was provided.

Results. According to the survey urography and retrograde cystography, a pronounced narrowing of bulbous urethra was determined. Uroflowmetry rates were: urinary volume 41ml, average volumetric flow rate 2.8ml/s, flow acceleration 0.42ml/s^2, time urination 14.7s, total urination time 45.2s, waiting time urination 8.0s, residual urine volume – 150ml. The patient was prepared, consent to the operation has been obtained, there were no contraindications. The patient lying on his back was under ETA. Penile access to the anterior urethra performed. With the Foley catheter and bougie control, the stricture up to 8 cm in length was dissected and incised. Artificial grafts were prepared: a section of the buccal mucosal tissues from the internal surfaces of the inferior lip and left cheek – 4*1 and 3*1.5 cm, respectively. Gauze tampons with antiseptic were installed into the affected areas of the cavity. The grafts were prepared for transplantation into the area of the narrowed urethra – selection by size and thickness of the layer of the ‘new’ urethra. Tubularization of the artificial components was performed sequentially (using a Foley catheter) with hemostasis control. ‘New’ widened urethra was connected with muscular surrounding by sutures; the total wound was sutured layer-by-layer. Aseptic bandage’s installed. The patient was transferred for a day to ICU, conservative drugs prescription was implemented according to the guidelines in the urological department.

Conclusion. In general, a person was in clinic for 7 days, 5 of them – after the surgery. Fast track method and well compliance has shown good results. After one month of Foley-controlled rehabilitation and conservative treatment, the patient has no complaints like before. It emphasizes the advantage after this kind of surgeries, so they should be provided more widely among such patients.

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INDICATORS OF LIPID METABOLISM AS A PREDICTOR OF MORTALITY IN COMBINED TRAUMA

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Introduction. In critical conditions, endotoxemia, systemic inflammation, an increase in lipid content and a change in the profile of lipoproteins in the blood have a stereotypical protective character and contribute to the survival of the body, which suggested a possible leading role for lipid metabolism disorders, cholesterol (CS), serum lipoprotein concentration (HDL LDL), triglycerides (TG) in the development of generalization of systemic inflammation, binding and neutralization of bacterial toxins.

Aim. To reveal the patterns of lipid metabolism disorders in patients with concomitant trauma during intensive therapy in order to predict the course of trauma.

Material and methods. The study included 56 patients with severe concomitant trauma, severity according to the APACHE II scale over 17 points, 37 surviving patients (group 1) and 19 dead patients (group 2).

In the course of intensive therapy (1, 3, 5, 7 and 10 days), a study was carried out indicators of lipid metabolism: cholesterol (CS), triglycerides (TG), high density lipoproteins (HDL) and low density lipoproteins (LDL).

Results. Comparative assessment of changes in lipid metabolism parameters showed that the concentration of cholesterol in both groups was lower than normal values, and significantly lower by 21% in the group of dead patients.

The content of triglycerides in the blood serum increased from the 1st to the 7th day, and by the 10th day it was significantly higher in the group of deaths by 28%.

In general, the group of deceased patients was characterized in comparison with the group of survivors by a significantly lower level of cholesterol by (18-23%) at all stages of the study, a significant decrease in serum HDL concentration with a significant difference on the 5th day between survivors and deaths, a significantly greater increase the level of TG by the 10th day, with an excess of the values of these indicators relative to the norm in the group of deceased.

Conclusions. 1. The study revealed features of lipid metabolism disorders in severe concomitant trauma. This allowed us to consider serum cholesterol levels less than 2 mmol / L, an increase in serum triglyceride levels of more than 2.3 mmol / L, a decrease in HDL, LDL as an additional criteria for the severity and possible predictors of an unfavorable clinical outcome of concomitant injury.

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DYNAMICS OF CHANGE IN THE NUMBER OF LYMPHOCYTES UNDER THE INFLUENCE OF GLUTAMINE IN PATIENTS WITH SEVERE COMBINED INJURY

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Introduction. Any severe concomitant injury leads to a decrease in the body's immune response. Studies of the state of lymphocytes in the early post-traumatic period show a sharp decrease in the content of these cells within the first 24 hours after injury. Glutamine, as a food source for rapidly proliferating cells (enterocytes, lymphocytes and macrophages), is able to rapidly increase the lymphocyte content and thereby enhance immunity.

Aim. to study the effect of enteral nutrition enriched with glutamine on the dynamics of lymphocytes in concomitant injury

Materials and methods. The prospective study included 60 victims with concomitant trauma (severity on the APACHE II scale more than 15 points), 40 men (66%) and 20 (44%) women. The average age of the patients was 45.7 ± 10 years. The patients were divided into 2 groups. Group 1 included 30 patients who previously received enteral nutrition (EN) enriched with pharmacological nutrients - glutamine (20 g / L), the second group consisted of 30 patients who received standard early enteral nutrition. The assessment of the dynamics of the absolute lymphocytes number level in patients was carried out upon admission, then on the 1st, 3rd and 5th days of being in the ICU.

Results. At the time of admission, all victims had a high content of the absolute number of lymphocytes - 3.1 (2.8-3.5) * 10^9 / l. In the early posttraumatic period, all patients showed a sharp decrease in the absolute number of lymphocytes. However, by the end of the first day, it sharply decreases to 1.0 (0.8-1.2) * 10^9 / l. Subsequently, a reliably significant increase in the number of lymphocytes in patients of group 1 is monitored, especially on days 3 and 5.

Conclusions. 1. In all victims with severe concomitant trauma, during the first 24 hours, there is a sharp decrease in the content of the absolute lymphocytes number in the peripheral blood.

2. With the early introduction of enteral nutrition, all victims have an increase in the number of lymphocytes by the 3rd day of being in the ICU. However, with the same amount of nutrition in patients receiving standard enteral mixtures, the level of the absolute number of lymphocytes on the 3rd and 5th days of being in the ICU is lower, in contrast to patients receiving food enriched with glutamine.

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EFFICIENCY OF LYMPHOTROPIC THERAPY IN ACUTE APPENDICITIS

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Introduction. Acute appendicitis is the most common urgent surgical disease with various manifestations and complications.

Aim. To analyze the use of lymphotropic antibacterial therapy in the treatment of patients with acute appendicitis as a method alternative to standard antibacterial therapy, which can improve the treatment of such patients.

Materials and methods. Patients were divided into two groups. The main group included patients who were administered antibiotics and pathogenetic drugs regionally to the ileocecal zone by lymphotropic route. The comparison group included patients who received standard antibiotic therapy.

Results. On the 5th day of the postoperative period, the level of Ig A in the main group was 1,16 + 0,7 mg / ml, and in the comparison group - 1, 54 + 0,8 mg / ml.
The level of elastase in the operated main group decreased to 111,797 ± 21,39 nmol / min • ml, ie 2,4 times ($p < 0,001$), and in patients of the comparison group - to 179,605 ± 26,79 nmol / min • ml, ie 1,5 times ($p < 0,05$).
Under the influence of lymphotropic administration of the antibiotic, the volume of the spleen decreased by 5 days to 281,22 + 18,8 cm^3, ie 145,44 cm3, and with standard administration of antibiotics, the spleen in the study period decreased to 344,71 ± 21,13 cm^3, ie by 79,54 cm3, which is less than in the main group by 66 cm^3, or 1,8 times ($p < 0,05$).

Conclusion. The introduction of antibiotics and pathogenetic drugs by lymphotropic regionally to the ileocecal zone provides adequate accumulation in the tissues of the vermiform process, which is not observed with their traditional introduction, which provides reliable antibacterial sanitation of this zone. The proposed method of antibiotic therapy improves the results of treatment of patients with acute appendicitis, reduces their length of stay in the hospital, which has a positive impact on financial problems. The use of lymphotropic therapy in acute appendicitis is a method of prevention of purulent-septic complications, especially in its destructive forms, which improves the results of treatment of patients with acute destructive appendicitis.

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OPTIMIZATION OF BIRTH OF HEALTHY PREGNANT WOMEN AND EARLY DIAGNOSIS OF COMPLICATIONS IN CHILDBIRTH

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Introduction. The prevention and prediction of complications during childbirth in the mother and fetus remain today a pressing problem of modern obstetrics. Unfortunately, over time, interest in the use of psychoprophylactic preparation for childbirth and in general for pregnant women as individuals has decreased Which indicates the relevance, the need for careful study and further research in this direction.

Aim. To study the current aspects of the course of labor in healthy women using retrospective indicators.

Materials and methods. To study this topic, an analysis of 1,078 births on the basis of the maternity ward for pregnant women with obstetric pathology of the State Institution «IPAG. acad. O.M. Lukyanova National Academy of Medical Sciences of Ukraine». It was found that among all births, the share of first-borns was 602 (55.8 %) women, of whom 451 (41.8 %) were pregnant for the first time, and only 86 (8 %) were healthy pregnant women.

Results. It was found that among 86 births the frequency of physiological births was 64%, of which in 47.7% of cases the birth was complicated, and pathological - 36%. The most common complications during childbirth were: premature rupture of membranes (PRPO), episio- and perineotomy, trauma to the birth canal. The main causes of pathological childbirth: abnormalities of labor, fetal distress, defect of the placenta and membranes, clinically narrow pelvis, malposition of the fetus and early postpartum hemorrhage. All children were born alive. It should be noted that all births where the Apgar score was ≤ 6 had no partner support, and the women themselves did not receive any preparation for childbirth.

Conclusions. According to our data, in almost healthy women who gave birth for the first time and had no perinatal loss in the anamnesis, did not undergo prenatal training and did not have partner support during childbirth, the number of complications during childbirth is increasing. Therefore, this group of healthy pregnant women needs more detailed study and analysis, developmentof prenatal training algorithms to improve perinatal indicators.

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ETIOLOGICAL STRUCTURE OF ACUTE RESPIRATORY VIRAL INFECTIONS IN PRESCHOOL CHILDREN

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Introduction. Acute respiratory viral infections (ARVI) are one of the most pressing medical and social problems of modern society and the main cause of morbidity in children, especially at the age of 3 to 7 years. This is due to the visits to organized children's groups and close contact with the infected, instability of post-infectious immunity, lack of personal hygiene skills and reinfection.

Aim. The aim of our study was to identify the etiological structure of ARVI in preschool children.

Materials and methods. The study was conducted in 2019 on the basis of the "City Children's Clinical Hospital of St. Zinaida" of Sumy City Council. In accordance with this goal, 98 preschool children with ARVI were examined. To establish the etiological structure of ARVI, a study of nasopharyngeal lavage was performed on the basis of the virological laboratory of the State Institution "Sumy Regional Laboratory Center". Species identification of respiratory viruses was performed by polymerase chain reaction using the test system "Ampli Sense SARS-screen". The study of microflora was conducted on the basis of the microbiological laboratory of Sumy State University using classical methods of isolation and identification.

Results. The dominant etiological agents in children were rhinoviruses (28,6%), adenoviruses (24,3%) and influenza B virus (14,3%). In the studied material, we identified relatively rare on that time metapneumoviruses and coronaviruses. Two different respiratory viruses were isolated in 15,9%. Combinations of viruses were different, but most often isolated respiratory syncytial virus. A total of 168 strains of microorganisms were isolated and identified from children. Microbes were excreted from the pharynx more often than from the nose (in 75,0±1,3% and 39,3±3,5%, respectively) ($p \leq 0,001$) of the patients. The frequency of excretion of microbes in monoculture from the nose was higher than from the throat ($p \leq 0,001$), two-component associations were more often on the mucous of the pharynx than the nose ($p \leq 0,01$). From the nose and throat of children together with representatives of indigenous microflora in 52,3% of children were isolated opportunistic pathogens. Among them, the dominant positions belonged to staphylococci (35,7%) and streptococci (29,2%). In the majority of patients (82,2%) the concomitant bacterial microflora was not isolated when the viral nature of ARVI was confirmed.

Conclusions. Thus, these results indicate that in children with acute respiratory viral infections, the mucous membrane of the nasal cavity is colonized by microbes much less frequently and in smaller quantities compared to the mucous of the throat. More than 80% of children had ARVI without the addition of bacterial microflora.

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METHODS OF TREATMENT OF ACUTE KIDNEY FAILURE IN CHILDREN

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Introduction. Acute kidney failure (ARF) is a condition in which there is sudden reduction in renal function which results in the inability to excrete metabolic wastes like creatinine, urea and to maintain fluid, electrolytes. The immediate causes of ARF are a decrease in the volumetric rate of blood flow, acute damage to the glomeruli with loss of glomerular capillaries, damage to the tubules of the nephrons or impaired outflow of urine due to obstruction. Depending on this, there are the following forms of ARF: prerenal (70%), parenchymal (25%), obstructive (5%). Treatment of ARF always begins with conservative therapy. In the absence of effect in pediatric practice, preference is given to peritoneal dialysis, and if it is impossible to conduct - hemodialysis.

Aim. Analysis of methods and effectiveness of ARF treatment in pediatric practice.

Materials and methods. During 2017-2021, 7 children with a diagnosis of ARF were treated in the somatic department of the Sumy pediatric Hospital. Three children had symptoms of ARF as a result of congenital or acquired hemolytic anemia, two children suffered from poisoning (rat poison and an unknown substance), the other 2 children had kidney damage due to severe infections (bilateral pneumonia and acute intestinal infection).

Results. From the beginning of the development of the first symptoms, all children received symptomatic treatment in the form of forced diuresis, anticoagulant therapy, antibiotic therapy, alkaline therapy in case of hemolytic anemia and rat poisoning. Conservative therapy has been effective in 3 children with various types of hemolytic anemias. These patients had a history of hemolytic crises and were treated at the first symptoms of hemolysis. All other 4 children were admitted late with clinic of acute poisoning and severe infections. The mother of a child with pneumonia refused treatment for 2 weeks, which led to the development of sepsis and acute kidney damage. 2 children received repeated sessions of peritoneal dialysis, and the 2 others - hemodialysis. After long-term treatment, all patients recovered, but are under the supervision of a nephrologist.

Conclusions. Conservative treatment of ARF is more effective with timely initiation of therapy, especially in patients with hemolytic crises. At late treatment of patients with severe infections and poisonings, conservative treatment is ineffective and requires additional methods of efferent therapy in the form of peritoneal or hemodialysis.

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ETIOLOGICAL STRUCTURE AND SENSITIVITY TO ANTIBIOTICS OF MICRO-ORGANISMS CAUSING PURULENT COMPLICATIONS OF DIABETIC FOOT SYNDROME

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Introduction. Purulent complications of diabetic foot syndrome (DFS) occupy one of the leading position among surgical diseases. Modern etiological factors of foot infection are characterized by the presence of a wide range of pathogens, which can be represented by a monoculture or associations. The urgency of the problem is determined by the increasing resistance of micro-organisms to antibacterial drugs.

Aim. Study of the microbial spectrum of pathogens of infectious processes in patients with DFS and determination of their sensitivity to antibiotics.

Materials and methods. The results of treatment of 114 patients with purulent-necrotic complications of DFS were studied. The 50 (43.9%) patients had phlegmon of the foot, 25 (21.9%) – gangrene of the toes, 13 (11.4%) – gangrene of the foot, 12 (10.5%) had trophic ulcers, in 8 (7.0%) – osteomyelitis, in 6 (5.3%) – abscesses of the toes and feet. All patients underwent bacteriological examination of wound contents to determine sensitivity to antibiotics.

Results. In 87 (76.3%) cases a monoculture was isolated, in 13 (11.4%) – microbial associations, in 14 (12.3%) patients the pathogen was not detected. Staphylococci and pathogens of the family Enterobacteriaceae were most often detected. St. Aureus was the cause of the infectious process in 28 (24.6%) patients, St. Epidermidis – in 19 (16.7%), E. Coli – in 9 (7.9%), P. mirabilis – in 8 (7.0%), Ps. Aeroginosa – in 6 (5.3%), Enterobacter – in 5 (4.4%), other microorganisms – in 12 (10.5%). The associations were dominated by a combination of St. Aureus and E. coli or St. Epidermidis and E. coli. Bacteriological examination was performed in dynamics. Analysis of the data revealed different sensitivity to antibiotics in different microorganisms. Among the detected microflora, the sensitivity to macrolides was 91.8–94.3%, cephalosporins of the IV generation – 82.3–86.6%, fluoroquinolones – 79.6–85.1%. The lowest sensitivity to penicillin antibiotics (including combined) was 65.7–76.2%, and doxycycline was 56.4–68.5%.

Conclusion. Identification of the microorganism and determination of its sensitivity to antibiotics is a obligatory component of the diagnostic and treatment process in the development of purulent complications of DFS. Among the pathogens most often found Staphylococci and pathogens of the Enterobacteriaceae. Analysis of the obtained data revealed the greatest sensitivity of microorganisms to macrolides, fluoroquinolones and cephalosporins of the IV generation.

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ANALYSIS OF THE EFFECTIVENESS OF MODERN DRUGS IN THE TREATMENT OF ATOPIC DERMATITIS

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Introduction. According to official statistics, atopic dermatitis (AD) in Ukraine occurs in 3-10 cases per 1,000 children. This differs from the results obtained during studies under the standardized international program ISAAC (International Study of Asthma and Allergies in Childhood), which exceed these indicators by 5-10 times. Due to the variety of pathogenetic mechanisms of blood pressure development, modern dermatologists face a difficult task - to treat patients without harming them or inconvenience.

Aim. To evaluate the effectiveness of external therapy without the use of topical glucocorticoids.

Results. Content of work. Under observation were 64 children aged 6 months to 6 years with manifestations of exacerbation of hypertension. The children will be divided into two groups. And the group - children of early age (up to 3 years) numbering 31 children. Preschool children (3-6 years old) with 33 children were concentrated in group II. According to gender characteristics, in group I the number of girls and boys was almost the same, respectively 52% and 48%, in group II boys prevailed by 52% ($p \leq 0.01$). The nature of breastfeeding in the first year of life in both groups was dominated by breastfeeding, which accounted for the vast majority of cases (> 60%), and manifestations of atopy in the family occurred in both groups: 57% in the first and 56.5% in the second. groups. In no case was the exacerbation associated with a diet disorder. All children received treatment according to the protocol of diagnosis and treatment of children with atopic dermatitis (Order of the Ministry of Health of Ukraine dated 24.12.2005 № 767). The division into subgroups was due to the refusal to use topical glucocorticosteroids in favor of a topical blocker of calcineurin. According to the results of observations, objective symptoms of the intensity of the allergic inflammatory process, such as erythema, wetting disappeared significantly ($p < 0.05$) previously in patients who used a topical blocker of calcineurin. In group I, it was observed on day 8.62 of treatment, which is 0.2 days ($p > 0.05$) later than children in the older group. Subjective symptoms (complaints of itching, poor sleep) disappeared almost simultaneously in all subgroups (2.2 - 2.3 days of treatment). During the examination, 9 patients refused external therapy (antihistamines were prescribed as basic therapy). In these cases, the results of treatment were ineffective.

Conclusions. 1. The use of a topical blocker of calcineurin makes it possible to reliably ($p < 0.05$) previously obtain a positive effect of therapy. 2. Subjective signs of intensity of BP manifestation were eliminated almost equally on the background of topical glucocorticosteroids and topical calcineurin blocker. 3. The overestimated role of hypoallergenic nutrition in the treatment of children with hypertension. 4. The use of antihistamines of the first, second generation as monotherapy is not justified.

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METHODS OF DEFINITION AND ESTIMATION OF SPINE DEFORMATION PARAMETERS IN THE HORIZONTAL PLANE DURING IDIOPATHIC SCOLIOSIS PATIENTS EXAMINATION

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Introduction. In the system of diagnosis of scoliotic spinal deformity, X-ray examination of the patient is mandatory. It objectifies the visual clinical picture of the pathology; specifies the information on the localization of curvature arcs and their parameters, anatomical and biomechanical characteristics of the spine, the rib cage of the chest and the pelvis.

During the X-ray examination, the parameters and nature of the curvature are studied in three planes. The magnitude of the lateral arcs of deformation is determined in the frontal plane, while the state of the spine profile is assessed in the sagittal plane. When studying the parameters of spinal deformation in the horizontal plane, rotational displacement and torsional deformation are observed.

The correlation between rotational and torsional changes of the spine with other components of multiplanar deformitions, their relationship with the anatomical type and etiology of the disease still require further study.

Aim. The study of information value and clinical suitability of famous methods of definition and estimation of spine deformation parameters in the horizontal plane during idiopathic scoliosis patients examination.

Materials and methods. An unsystematic review of publications is proposed, in which the methods and techniques for determining the parameters of spinal deformation in the horizontal plane in scoliotic patients over the past 20 years are described.

Results. The information value and clinical suitability of the most common and practically significant methods are investigated. It is established that the current tendency of comprehensive examination of patients with scoliotic disease is the emergence of new, more informative methods for quantifying the parameters of spinal deformity in the horizontal plane, which has become possible due to the development and improvement of technology. It should be noted that the study of the features of anatomical-structural, torsional changes are given insufficient attention.

Conclusions. Further study of vertebral torsional changes should lead to a better understanding of the mechanisms that cause scoliotic deformation, which will contribute to the development of pathogenetic treatment methods.

Dynamic assessment of rotational-torsional changes of the spine can be used as a predictor of progression in different types of scoliotic deformations, an indicator of the outcome of conservative and surgical treatment.

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FEATURES OF THE PRE-HOSPITAL STAGE OF EMERGENCY MEDICAL CARE FOR VICTIMS WITH SEVERE INJURIES

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Introduction. The result of treatment of victims with severe injuries depends on the timely emergency medical care provided. Errors and treatment defects made in the pre-hospital stage affect the final result of treatment and cannot be corrected later, even if high quality care is provided. That is why it is necessary to pay special attention to the pre-hospital period of medical care for the injured.

Aim. Study of the duration of prehospital stage of medical care for victims with concomitant skeletal trauma.

Materials and methods. We studied the characteristics of emergency medical care for 108 people with polysystemic and multiple organ injuries. The average age of the victims was 35.6 ± 1.45 years.

Results. One of the main characteristics of emergency medical care is the duration of the pre-hospital period. It was found that only 9.3 % of the victims were hospitalized within 30 minutes and another 33.3 % were delivered within 30 to 60 minutes. The largest group (41.7 %) consisted of victims with a pre-hospital phase of 1 to 3 hours. Victims who were hospitalized more than 3 hours after injury accounted for 13.9 %. In 2 victims (1.9 %), the time of injury could not be established.

In the overall study array, the mean duration of the prehospital phase was (74.2 ± 16.8) minutes; the minimum time from injury to hospitalization was 17 minutes, and in 3 cases hospitalization occurred in more than 12 hours. Such indicators cannot be considered satisfactory, since the optimal time of admission to a medical institution is the first hour after injury; however, most of the victims (55.6%) with severe trauma received qualified medical care outside the “golden hour”, which significantly reduces its effectiveness. More than 13.9 % of the victims were hospitalized late – more than 3 hours. These were mostly patients who, for various reasons, did not seek medical care in time.

Conclusions. The duration of the pre-hospital period in 55.6% of patients with severe trauma is suboptimal. There is an opportunity to improve the quality of emergency medical care for this category of victims, primarily by reducing the pre-hospital time.

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SERA MARKERS AND LYMPHOCYTES ASSOCIATION IN CHILDREN WITH CEREBRAL PALSY (CP)

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Introduction. Blood is a media for various immune cells and signalling molecules (cytokines, chemokines and growth factors). Signalling molecules exert complex influence over blood cells, i.e. lymphocytes release signalling molecules and respond via proliferation or apoptosis. Increased levels of such signalling molecules, as sera markers (CRP, BAFF, TARC, angiogenin, serpin E1, RBP-4, EGF, PDGF-AA), along with increased levels of T- and B-lymphocytes have been reported in children with CP.

Aim. To determine the link between increased levels of sera markers and lymphocytes in children with CP.

Materials and methods. Biological meaning behind increased levels of such products of gene activity, as sera markers (CRP, BAFF, TARC, angiogenin, serpin E1, RBP-4, EGF, PDGF-AA) and increased levels of T- and B-lymphocytes in children with CP compared to healthy children was defined by statistical approach using the Database for Annotation, Visualization and Integrated Discovery (DAVID).

Results. Sera makers (BAFF, EGF, PDGF-AA) were associated with anti-apoptotic processes in lymphocytes.

Conclusions. Increased levels of sera anti-apoptotic markers resulted in reduction of apoptosis in T- and B-lymphocytes. Correspondingly, we observed increased levels of lymphocytes.

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THE PROBLEM OF OPTIMIZING THE MANAGEMENT OF PREGNANT WOMEN WITH TUMORS AND TUMOR-LIKE FORMATIONS OF THE OVARIES

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Introduction. The problem of tumors and tumor-like formations of the ovaries in pregnant women today remains relevant due to the lack of standardized methods for their diagnosis and treatment tactics in pregnant women.

Aim. This thesis were to evaluate the effectiveness of management of pregnant women with tumors and tumor-like formations of the ovaries to determine the prognosis of pregnancy and the condition of the fetus.

Material and methods. In a retrospective registry study, including women who delivered during a three-year period, there were 12 pregnant women with detected tumors and tumor-like formations of the ovaries during pregnancy. Confirmation of the diagnosis was performed by ultrasound examination with Doppler blood flow in these tumors. The average age of pregnant women was 25, 2 years. During the first screening examination, ovarian pathology was detected in 10 pregnant women (83.3%), in 2 pregnant women during the second screening examination (16.7%). Surgical treatment required 4 patients (33.3%), which was performed by laparoscopic access at 16-17 weeks of pregnancy. Indications for surgical treatment were - torsion of the leg of the cyst in 3 pregnant women and 1 pregnant woman with severe pain in combination with large tumors. All other pregnant women were observed conservatively under dynamic supervision. The score of all newborns for Apgar was 8-9 points

Results and conclusions. Ultrasound examination with Doppler vascular tumors and ovarian tumors can confirm the diagnosis, choose the optimal method of surgical treatment in case of complications associated with these formations; the optimal time for laparoscopic treatment is 16-17 weeks of pregnancy.

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THE DEGREE OF READLINES OF THE SCHOOLCHILDREN AND THEIR PARENTS FOR THE EARLY IMPLEMENTATION FOR BASIC LIFE SUPPORT TRAINING

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Introduction. Sudden cardiac arrest is one of the most common causes of death in the world. In economically developed countries with a high level of organization of emergency medical services, the number of resuscitation measures carried out by the public is much higher compared to countries such as Ukraine. Today, cardiopulmonary resuscitation (CPR) in the prehospital phase, although crucial in the emergency care system, remains a weak link in the survival chain. Lack of systematic CPR training leads to the loss of acquired knowledge over time. Therefore, CPR training should be actively implemented during the school years. With the increase in the number of schoolchildren who will study CPR, the share of people who have approximately professional skills in resuscitation should increase in the future.

Aim. The aim of our work was to assess the degree of readiness of schoolchildren and their parents for the early implementation of basic life support training.

Materials and methods. Questionnaires were developed, which included the main questions and indicators on the attitude of schoolchildren and their parents to the early implementation of basic life support training. The questionnaires contained questions aimed at determining the attitude of children and their parents to the need for CPR training. Participants were presented with a line of answers, among which respondents had to choose only one. These included: "strongly disagree"; "No, do not agree"; "We do not agree"; "We rather agree; "Agree"; "Absolutely agree" with the statements that were proposed in the questionnaire. The group of respondents included 236 people, including 118 schoolchildren of the primary school in Sumy and 118 - their parents. The survey was conducted anonymously.

Results. According to our research, it was found that the majority of students (63.5%) and their parents (71.2%) believe that CPR education should begin in primary school; CPR training is conducted in schools by qualified medical staff; most respondents supported the view that school teachers should be competent in teaching CPR; a high percentage of parents and children believe that CPR training will increase schoolchildrens' trust in doctors; more than 60% of schoolchildren and parents consider it appropriate to start CPR in schools; 75.4% of schoolchildren and 78.8% of parents believe that schoolchildren are not afraid to use CPR, despite the infections they can get from contact with a person who needs help; parents believe that schoolchildren are mentally able to learn CPR methods.

Conclusion. Thus, the results of the survey do not indicate that children and their parents have a high interest with a high degree of readiness to master the skills of basic life support and are ready to apply them despite the difficulties and threats they may face during resuscitation. Therefore, there is a need to organize training in basic life support for schoolchildren.

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NON- THERAPEUTIC SURGERY IN A PATIENT WITH ABDOMINAL SPLENOSIS PREVIOUSLY OPERATED ON FOR STOMACH CANCER

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Introduction. Non-therapeutic or unnecessary operations can be performed in case of diagnostic difficulties, when a disease is established that absolutely needs surgical treatment. According to the modern active cytoreduction concept in oncology, all resectable metastases are removed with subsequent targeted therapy. Such treatment significantly increases the survival rate of patients. Serious problems arise in the diagnosis of metastasis in patients who have previously undergone splenectomy. Developing post-splenectomy splenosis (Sp) can simulate the presence of metastases and be an indication for unnecessary surgery. Although Sp was first described back in 1896, the mechanism of spleen revival after its removal remains completely unexplored.

It is proved that in patients after post-traumatic splenectomy, abdominal Sp occurred in one-third of the patients

Aim. To draw the attention of oncologists to the possibility of developing post-splenectomy splenosis, mimicking metastasis, in order to avoid unnecessary laparotomy

Materials and methods. This is the case report of a 44-year-old man, who

underwent three years ago, a gastrectomy for cancer of the stomach. The spleen was damaged during the operation

and splenectomy was performed. After discharge from the clinic, according to oncological standards, the patient was regularly examined to exclude the prolongation of the malignant process.

At follow-up examination three years after surgery, abdominal ultrasound revealed tumor-like formation in the left under diaphragmatic space and two rounded lesions in the left lobe of the liver. CT scan confirmed this conclusion. Identified tumor formations were regarded as metastases, which became an indication for surgery. The patient underwent laparotomy, removal of the tumor of the left under the diaphragmatic space, resection of the left lobe of the liver. Surprisingly all excised tumors proved to have histological structure typical for the spleen without evidence of neoplasia, and finally, abdominal Sp was diagnosed.

Conclusions. In a patients with a splenectomy in the past abdominal Sp can mimic metastasis and become an indication for unnecessary surgery.

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THE PROBLEM OF FOREIGN BODIES OF THE GASTROINTESTINAL TRACT IN PEDIATRIC PRACTICE

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Introduction. The problem of foreign bodies of the esophagus and gastrointestinal tract in recent years is particularly relevant. The incidence does not tend to decrease due to the proliferation of battery-powered toys, constructors and magnets, as well as the carelessness of parents. The most frequent localization of foreign bodies is another physiological narrowing of esophagus (about 60 - 70%), stomach about 20%, intestines - 10%. The main complications of a foreign body in the esophagus and stomach include: esophageal obstruction, sores, perforation of their walls with the development of mediastinitis or peritonitis. The greatest danger is posed by batteries, because they contain alkali, which corrodes the mucous membrane.

Aim. Analysis of the number of cases and consequences of foreign bodies entering the gastrointestinal tract in pediatric practice.

Materials and methods. In the conditions of the Sumy pediatric hospital with pathology of a foreign body of esophagus and gastrointestinal tract during 2018 - 23 children were treated, for 2019 - 28, in 2020 - there were 41 such cases.

Results. All children were admitted for emergency indications with different age of the disease with complaints of pain, difficulties in swallowing, increased salivation, vomiting. When a foreign body entered the stomach and intestines 25 children had an involuntary excretion, and 63 children underwent esophago- and gastroscopy with extraction of the foreign body. 2 children required laparotomy due to the large size of foreign bodies (bonded magnets, trichobezoar). The worst consequences occurred in two children with prolonged exposure of the battery in the esophagus. The esophageal perforation, mediastinitis, and later - cicatricial esophageal stenosis developed.

Conclusions. The frequency of accidents involving foreign bodies can be reduced by actively explaining to parents through the media. Physicians should be vigilant in collecting medical history during the treatment a patient with the above complaints, because the presence of the battery in the esophagus for more than 6 hours leads to perforation of its wall and the development of life-threatening complications.

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MORBIDITY OF COVID-19 AMONG CHILDREN IN SUMY

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Introduction. Coronavirus infection (COVID-19) was first registered in late 2019. The disease spread rapidly around the world in a few months and was declared a global pandemic in March 2020 by WHO.

According to current statistics, children represent about 1–5% of diagnosed cases of COVID-19. Generally, COVID-19 is a less severe disease for children than it is for adults. Approximately 90% of pediatric patients are diagnosed with asymptomatic, mild or moderate disease. However, up to 6.7% of cases can be severe. Severe disease is usually observed in patients younger than 1 year of age and in patients with comorbidities.

Aim. The aim of our study is to analyze the incidence of COVID-19 among children in Sumy.

Materials and methods. The incidence of COVID-19 is studied among children aged 0 to 17 years old in Sumy according to statistics of 2020 and 8 months of 2021.

Results. According to the obtained data, the incidence of COVID-19 in 2020 was 115 children, including 28 children under 1 year. Whereas, in 2021 for 8 months this figure is 214 children, including 36 children under one year. The obtained data indicate a rapid increase in morbidity among children in Sumy.

Conclusion. The number of patients in 8 months of 2021 that need inpatient treatment nearly doubled compared to last year, which may indicate a mutation in the virus, affecting more children.

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DYNAMICS OF CELL IMMUNITY INDICATORS IN CHILDREN WITH ACUTE RESPIRATORY VIRAL INFECTIONS

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Introduction. Acute respiratory viral infections (ARVI) are the most common infectious diseases worldwide among all age groups. Almost 90% of the population of our planet at least once a year suffers from this disease. Lack of specific immunity contributes to the rapid spread of ARI and complications, which in turn leads to economic losses. According to the WHO, the incidence is 80-90% of all infectious diseases.

Aim. To study the indicators of cellular immunity in children with acute respiratory viral infections.

Materials and methods. We examined 38 children aged 3 to 7 years. The main group included 21 children with acute respiratory viral infections. The control group consisted of 17 healthy children, representative of age and gender. The study of cellular immunity was performed in the acute period of the disease on the basis of determining the content of CD4 + - and CD8 + lymphocytes by immunofluorescence with monoclonal antibodies in serum. Statistical processing of the obtained results was performed using a standard statistical computer program "Microsoft Excel" (2007), adapted for biomedical research according to the method of variation statistics.

Results. The acute period of the disease in patients of the main group was characterized by an increase in the number of CD4 + - lymphocytes (38.15 ± 1.21)%) compared with children in the control group (32.11 ± 1.18)%), ($p < 0.01$). In addition, the indicators of CD8 + lymphocytes (25.41 ± 1.14)%) in patients were significantly higher than those in almost healthy children (16.51 ± 0.97)%), respectively, ($p < 0.001$).

Conclusions. Significant growth of serum CD4 + and CD8 + lymphocytes was determined in preschool children with acute respiratory viral infections in the midst of the disease.

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STRUCTURE OF RESPIRATORY DISEASES AMONG THE POPULATION OF THE SUMY REGION IN THE CONDITIONS OF THE COVID-19 EPIDEMIC

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Introduction. One of the first places in the system of life values of any state is the health of the population. Therefore, maintaining public health and reducing morbidity are the most important socio-economic challenges facing it. Negative demographic trends create real and potential threats to the sustainable development of society not only at the present stage, but also in the future. This problem is especially acute today in the world, Ukraine and Sumy region, as the coronavirus epidemic has affected and continues to affect various regions. According to the WHO, in 2019 the most deadly group of infectious diseases were pneumonia and other lower respiratory tract infections, which ranked fourth in the list of leading causes of death.

Aim. The work was to study the structure of respiratory diseases among the population of Sumy region and Sumy in the conditions of the COVID-19 epidemic.

Materials and methods. The analysis of statistical data was conducted for 2019 and 2020.

Results. In 2020, when the COVID-19 epidemic was declared, the total incidence per 100 thousand population compared to 2019 decreased by 9% (from 47755.52 to 43530.21), while respiratory diseases were registered less often by only 3.4% (6084 cases per 100 thousand population in 2019 and 5874.93 cases per 100 thousand population in 2019). In the structure of the total incidence of respiratory diseases increased slightly: from 13% to 13.5%. If in 2019 almost half of the diseases were diseases of the upper respiratory tract (21.2% - acute pharyngitis and tonsillitis and 23, 1% - acute laryngitis and tracheitis), then in 2020 the largest share among respiratory diseases was pneumonia (31.3%). Its share has increased 3.4 times compared to 2019 (31.3% and 9.3%, respectively), while the share of upper respiratory diseases has decreased. The proportion of other respiratory diseases has changed slightly.

Conclusions. During the epidemic of COVID-19 infection there were changes in the structure of respiratory morbidity due to an increase in the proportion of pneumonia, namely every third inhabitant of Sumy region and Sumy diagnosed with pneumonia in respiratory diseases.

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LYMPHOTROPIC ANTIBACTERIAL THERAPY OF TUBERCULOSIS PLEURITIS

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Introduction. Pleuritis of tuberculous or nonspecific genesis is a pathogenetically complex disease, given the constant circulation of fluid in the pleural cavity. The accumulation of the latter occurs in a significant number of diseases, due to that the verification of the disease is often delayed. However, it was found that the tuberculous genesis of the disease accounts for 65–67 % of all cases of pleural effusion syndrome (PES).

Delayed or insufficiently effective treatment is accompanied by the chronicity of the process in 10–12 % of patients. The latter leads to the development of hypertension of the small circulation, which in turn is complicated by the formation of a chronic pulmonary heart. The consequences of the latter are not very promising, which determined the urgency of the problem.

Aim. In order to prevent this serious complication, we proposed lymphotropic administration of antibacterial drugs.

Materials and methods. The effectiveness of antibacterial therapy in 67 patients was studied and compared with the effectiveness of patients in the standard treatment regimen. Antibacterial drugs were injected paravertebrally into the rectus muscle of the back at the level of the angle of the shoulder blades according to the original method of the department.

Results. Abacillation was achieved in 75 % of bacillary patients at the end of the intensive phase of treatment (2 months), and in 25 % – in 2 months of the maintenance phase. In patients of the comparison group, abacillation was achieved at the end of 4 months of the maintenance phase. Residual changes in the pleural cavity according to our method were minimal – pleural layers in 9 (13.4 %), while among patients in the comparison group chronic pleurisy developed in 10 (14.9 %) people, who underwent surgery – pleurectomy.

Conclusions. Taken into account the targeting of lymphotropic antibacterial therapy, we can assume that the inflammation was removed at its expense and the course of the inflammatory process was positive. Therefore, the lymphotropic method of antibacterial therapy is effective in the treatment of tuberculous pleurisy in general and a reliable means of preventing its complications such as chronic pleurisy in particular.

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OPTIMIZATION OF METHODS OF SURGICAL TREATMENT OF CRANIOPHARYNGIOMAS

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Introduction. For neurosurgeons, the most difficult problems are craniopharyngiomas. This disease - look like a rare with low histological degree - embryonic malformations of the selar and paraselar area, the prevalence of the tumor is 2/100 000.

Aim. Bring to an improved level the results of treatment with craniopharingioma - a method of selective use of various surgical treatments.

Materials and object of research. An analysis of the literature was performed, which contained information about the patients who underwent surgery and their results of surgical interventions was performed. The average age of patients was 37.6 years.

Supraselar component in the majority have 94-95% (above the turkish saddle is located purely occupies 20-41%, and extra - intrasellar (53-75 %). In one study (3.2%), it was noted that the tumor occupied several adjacent anatomical areas. Endoscopic transsphenoidal access provides a better degree of resection with minimal postoperative neurological manifestations, so this method is an alternative to craniotomy.

Results. The work was analyzed, in which it was found that 86.5% of patients experienced treatment as a general resection of craniopharyngioma through transcranial access.

Another 13.5% of patients underwent subtotal craniopharyngioma removal. In 5% of patients during follow-up for 360 - 913 days, further growth of the residual tumor was recorded, 3% of whom underwent surgery and then radiation therapy. During their first operation, if we do not take into account the total resection of the tumor, then 3% of patients had a recurrence within 450 - 1034 days.

After analyzing the results of supraselar injury, including its treatment for fifty-three operations, nineteen were treated with endoscopic endonasal transsphenoidal surgery and thirty-four with craniotomy. The size of the resection was the same between the 2 groups (74.5% EETS: 80.6% craniotomy, $p = 0.66$). Patients in the craniotomy group showed an increase in the incidence of cranial nerve damage (0% EETS versus 33.6% craniotomy, $p = 0.06$). Recurrences (32.2% EETS vs. 43.5% craniotomy) and survival curves were the same between group 2.

Conclusions. It can be concluded with respect to surgical treatment of craniopharyngiomas that treatment requires a differentiated approach.

To ensure overall or maximum safety resection, endoscopic endonasal transsphenoidal surgery may be used for each craniopharyngioma, regardless of size, location, and enlargement.

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ANALYSIS OF FORECASTING THE COURSE OF BRAIN TUMORS IN UKRAINIAN POPULATION

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Introduction. In Ukraine, the incidence of malignant brain tumors is 5.4 cases per 100 thousand population according to 2019 data. In particular, women have this figure is 4.8 per 100 thousand population, men - 6.1 per 100 thousand people.

In Ukraine, there are no uniform standards for the diagnosis of tumors in such patients at an early stage, so the urgent issue is the development of protocols and recommendations that are mandatory for doctors of various specialties.

Aim of the work– develop screening methods for diagnosing brain tumors in the early stages for better treatment of brain tumors.

Materials and object of research. Domestic and foreign scientific publications were analyzed to develop screening methods. These studies were analyzed to determine the general principles of pathogenesis and symptom development.

Results. Based on the analysis of the work, it was found that under the influence of a certain provoking factor there are changes in the group of cells of the gray matter of the brain of a certain differentiation, resulting in impaired control of the mitotic spindle and uncontrolled cell division. It was also found that the high frequency of exposure to adverse factors on the mitotic process, affects the stage of telophase or anaphase, as a consequence, the tumor will lose its contours and will be more malignant.

Histologically, according to the functional purpose in the gray matter of the brain there are two main types: trophic and conductive. And depending on the number of cells affected in the patient, may be disturbed by increased fatigue, decreased efficiency, signs of hypoxia, inhibition, tachyarrhythmia, reflex disorders, as well as possible functional disorders of the system "hypothalamus-pituitary-executive organs".

Therefore, to reduce the risk of developing a tumor, it is necessary to find out a detailed history to identify provoking factors, their time of exposure depending on age and, if possible, to isolate from them.

Conclusions. Currently, there is a demographic regression of the population in Ukraine - caused by various features, partly due to late detection of diseases and subsequent ineffective treatment, so there is a need to write a national protocol for screening and diagnosis of patients directly with brain tumors. The development of appropriate screening tests can significantly improve the state of medical care for such patients.

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RESULTS OF ULTRASOUND EXAMINATION OF THE LIVER AND BILIARY SYSTEM DURING URSODEOXYCHOLIC ACID TREATMENT IN PATIENTS WITH DIABETES MELLITUS

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Introduction. It is known that metabolic disorders in diabetes mellitus (DM) lead to changes in the functional activity of all organs and systems, including the hepatobiliary system. Diabetes mellitus is one of the diseases in which the liver is damaged more and more seriously. In this regard, the study of its functional state is of particular interest, since liver damage significantly affects the course of the disease, the level of compensation and the prognosis of the pathology.

Aim. To assess the ultrasound parameters of the liver and biliary system in patients with diabetes mellitus after a course of ursodeoxycholic acid treatment.

Materials and methods. The study included 78 patients with diabetes mellitus (type 1 diabetes - group I (30 patients), type 2 diabetes - group II (48 patients)). According to the duration of diabetes, patients were divided into three subgroups - a) up to five years; b) 5-10 years; c) more than 10 years. The control group consisted of 23 practically healthy people. The course of treatment was carried out with ursodeoxycholic acid at the rate of 10-12 mg per 1 kg of body per day for 6 months. Ultrasound methods were used.

Results. During treatment with ursodeoxycholic acid, a dynamic change in the volume of the gallbladder was observed. Particularly clear dynamics of the gallbladder volume after treatment was observed in the short-term course of diabetes (subgroups 1a and 2a). With a long course of diabetes mellitus (subgroups 1b, 1c and 2b, 2c), the gallbladder volume remained 1.3 times higher in patients with type 1 diabetes and 1.75 times higher in patients with type 2 diabetes after treatment. It was also found that during treatment in patients with both type 1 diabetes and type 2 diabetes, normalization of echogenicity ($p<0.05$) and echostructure ($p<0.01$) of the liver, a decrease in the right and left lobes of the organ ($p<0.05$), preservation of the vascular pattern ($p<0.001$).

Conclusions. Thus, a six-month treatment with ursodeoxycholic acid in patients with diabetes mellitus indicates a positive therapeutic effect of the studied drug on the liver and biliary system.

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THE EFFECT OF URSODEOXYCHOLIC ACID TREATMENT ON SOME CLINICAL AND LABORATORY PARAMETERS IN PATIENTS WITH DIABETES MELLITUS

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Introduction. At present, diabetes mellitus (DM) is considered one of the main problems after cardiovascular and oncological diseases. The possibilities of modern diagnostics and treatment of diabetes mellitus have been significantly expanded, which makes it possible to reduce mortality and significantly increase the life expectancy of patients. However, there has been a significant increase in mortality from multiple complications of diabetes. Therefore, clinicians in different countries have focused on the prevention, diagnosis and treatment of complications of diabetes, including lesions of the hepatobiliary system (HBS). Ursodeoxycholic acid was chosen as a drug for the treatment of HBS, which has choleretic, cholelitholytic, hypolipidemic, hypocholesterolemic effects.

Aim. To assess some clinical and laboratory parameters of patients with diabetes mellitus after a course of ursodeoxycholic acid treatment.

Materials and methods. The study included 30 patients with type 1 diabetes and 48 patients with type 2 diabetes. The control group consisted of 23 practically healthy people. The course of treatment was 6 months. The drug was used at the rate of 10-12 mg per 1 kg of body per day. Clinical and laboratory (assessment of clinical signs, general and biochemical blood tests) research methods were used.

Results. After a 6-month course of treatment, 64 (82.1%) patients reported a significant improvement in their condition - in the form of a decrease in weakness, fatigue, a decrease in dyspeptic complaints, an increase in working capacity ($p<0.05$). It was found that compared with the indicators before treatment, all three indicators of cytolysis syndrome (ALT - from 0.92±0.08 to 0.66±0.05 mmol/hxL, AST - from 0.86±0, 01 to 0.57±0.04 mmol/hxL, LDG - from 346.0 ± 32.1 to 242.0±20.4 U/L) during treatment decreased 1.5 times ($p<0.05$). The same trend was observed in terms of glutamine transferase (from 58.2±4.5 to 34.3±5.2 U/L and ALP (from 146.2±8.8 to 96.5±7.5 U/L When comparing lipid metabolism parameters before and after treatment, the levels of total cholesterol, LDL (from 4.9±1.2 to 3.2±0.2 mmol/L), HDL (from 0.84±0.16 to 1.1±0.4 mmol/L) and triglycerides (from 3.1±1.53 to 2.4±0.3 mmol/L), there was a tendency towards normalization of these indicators.

Conclusions. Thus, a six-month course of ursodeoxycholic acid treatment in patients with diabetes led to an improvement in the functional state of the hepatobiliary system, normalization of protein, pigment, enzymatic metabolism and, to a lesser extent, lipid metabolism in the liver, which indicates an improvement in cellular metabolism and redox processes.

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DYNAMICS OF THE CONTENT OF SOME MINERALS IN TODLERS WITH COMMUNITY-ACQUIRED PNEUMONIA

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Introduction. Respiratory diseases are widespread among children and have a large share in the structure of overall morbidity, especially pneumonia. Macro- and microelements play a leading role in the effective functioning of the immune system and the maintenance of the biological balance of the organism. The resistance of the child's body to acute infectious diseases also depends on the supply of trace elements.

Aim. To study the concentration of zinc (Zn), copper (Cu), iron (Fe) and manganese (Mn) in the serum of todlers with community-acquired pneumonia (CAP) in the dynamics of the disease.

Materials and methods. We examined 21 children (aged 1–3 years) who were hospitalized with CAP in the infectious unit No. 1 of St. Zinaida Sumy City Children's Hospital. 18 apparently healthy children of appropriate age and gender composed the control group. Determination of the level of microelements in the blood serum was performed by the method of absorption spectrophotometry on the 1^{st} or 2^{nd} day of hospitalization and in the period of abatement of clinical manifestations of the disease ($12\text{-}14^{th}$ day).

Results. At the onset of the disease, Zn level decreased significantly ($p < 0{,}001$), and Cu level increased ($p < 0.001$) in comparison with the control group. The levels of Fe ($p > 0.05$) and Mn ($p > 0.05$) did not differ from the data in the control group. After the standard therapy, in sick children, the content of Cu decreased ($p < 0.05$), and Zn increased ($p < 0.05$), but did not reach the indicators of almost healthy children. In the dynamics of the treatment, the levels of iron and manganese did not differ from the data in the control group ($p > 0.05$).

Conclusions. To summarize, it is necessary to take into consideration the existing violations of micronutrient composition in toddlers with CAP, which are involved in the pathogenetic structure of the disease, which require the development of adequate preventive and curative rehabilitation measures.

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VITAMIN D EFFECT ON THE ADOLESCENT QUALITY OF LIFE

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Introduction. Vitamin D deficiency is a common problem worldwide, constantly increasing with the urbanization level. It can cause many diseases, anxiety and depression, especially in adolescence.

WHO defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

Aim. to determine Vitamin D effect on the adolescent quality of life

Materials and methods. The study was conducted by questioning 177 students of Municipal Institution of Sumy Regional Council "Sumy Professional Medical College" (25 boys and 152 girls aged 15 to 18). The main group consisted of 22 students (12%) who took vitamin D (5 students or 22.7% in the form of monovitamin D and 17 students (77.3%) in multivitamins), others (155 students or 88%) were the control group.

Results. Depressive mood predisposition noted at 3 (13.6%) of those who take vitamin D, 8 (36.4%) students have proneness to SARS; 18 students (81.8%) are more motivated and active in self-realization. At the same time, in students of the control group, these indicators differed significantly and amounted to 33.3%, 52.3% and 40.6%, respectively.

Conclusions. Those students who take vitamin D have lower incidence of SARS and depressed mood. Students who do not take vitamin D are less focused and motivated. Vitamin D intake is insufficient among students.

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ANALYSIS AND EVALUATION OF DATA ABOUT PATIENTS WITH PEPTIC ULCER DISEASE

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Introduction. Peptic ulcer disease (PUD) is a chronic disease, the main feature of which is the formation of ulcerative defects in the mucous membrane of the stomach or duodenum, has a cyclical nature and proceeds with periods of exacerbation and remission. According to statistics, from 6 to 14% of the population in different parts of the world suffer from ulcer disease. Children account for 1% of the incidence. Most often, men aged 40-60 are affected.

Aim. To improve the results of treatment of patients with PUD.

Materials and methods. The experience of diagnostics and treatment of 50 patients with PUD in several district hospitals of the Kirovograd region is analyzed. There were 18 females (36%) and 32 males (64%). Age of patients ranges from 21 to 79 years.

Results. According to the results of the last 2 years, all patients had standard symptoms characteristic of peptic ulcer disease, among which relapses were found in 12% of men from the surveyed number, mainly with similar forms of the disease, but there were no recurrent cases in women from this sample. In patients under constant supervision for gastrointestinal diseases, the number of relapses decreased from 10% of cases per year to 4%. Patients with recurrent disease had a negative test result during Helicobacter pylori control. Of the total number of relapses, 4 cases of massive gastric bleeding and 2 cases of perforation were confirmed. The mortality rate last year was 0%. The number of operations performed in 2 years – 3, namely: suturing of a perforated ulcer – 1, gastrotomy according to Billroth-2 – 2. The use of standard treatment regimens gave a positive result, 89% of patients are in remission, and 11% continue the course. Outpatient treatment accounts for 37% of the total, inpatient – 63%.

Conclusions. Nowadays, peptic ulcer disease is very common, but there is a tendency towards a decrease in the number of patients with complicated forms of peptic ulcer disease, due to the effectiveness of modern antiulcer therapy regimens, an increase in the availability of endoscopic diagnostics and the use of screening tests to clarify the presence of Helicobacter pylori, and successful eradication therapy radically changes the course disease, preventing its recurrence.

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EFFECT OF THE COMBINATION OF PAI-1 AND APOE GENOTYPES IN AZERBAIJANIS WITH CORONARY HEART DISEASE ON ITS PROGNOSIS

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Introduction. At present, coronary heart disease (CHD) and myocardial infarction account for approximately two thirds of deaths from all cardiovascular diseases. It is known that morbidity and mortality from coronary heart disease is characterized by ethnographic heterogeneity, therefore, the study of genetic factors and their combinations for each individual population is of great scientific and practical interest.

Aim. To study the effect of the combination of PAI-1 and ApoE genotypes in Azerbaijanis with CHD on the prognosis of its patology.

Materials and methods. The study included 34 Azerbaijani patients of both sexes with CHD aged 39-65 years, in whom combinations of polymorphic markers of the ApoE and PAI-1 genes were identified. The study used genetic research methods (determination of the genotypes of the ApoE gene and the PAI-1 gene).

Results. Combinations of genotypes 4G/4G and e4/e4, as well as genotypes 4G/4G and e2/e3, were studied. The choice of these genotypes is explained by the fact that the 4G/4G genotype was significantly more often present in patients with CHD compared with patients without CHD, and the genotypes of the ApoE gene were selected because of the reliably high values of atherogenic lipoproteins: low-density lipoprotein, total cholesterol - in the presence of the e4/e4 genotype and triglycerides - in patients with the e2/e3 genotype.

26 patients did not have a fatal outcome (FO), 8 patients died. In patients with CHD with FO, the combination of e4/e4 + 4G/4G genotypes was noted in 37.5% of cases, and in CHD without FO - in 19.2% of patients. The calculations performed did not show a significant difference in the results obtained. There was no statistically significant difference between patients with CHD with FO and without FO and in the presence of a combination of e2/e3 + 4G/4G genotypes, the frequency of which is 50.0% in the presence of FO and 53.8% without FO. Despite the presence of a prognostically unfavorable for CHD genotype 4G/4G of the PAI-1 gene, as well as unfavorable in relation to the lipid profile of the e4/e4 and e2/e3 genotypes of the ApoE gene, the combination of these genotypes does not affect the prognosis of CHD in terms of the development of FO. The frequency of occurrence of a combination of e4/e4 + 4G/4G genotypes in patients with CHD and heart failure (HF) was found in 37.5% of individuals, which is statistically significantly higher than in patients with CHD without HF, for whom this combination of PAI-1 and ApoE genotypes was noted only in 7.69% of individuals. In patients with CHD, combined with arterial hypertension (AH), a statistically significant decrease in the incidence of the 4G/4G genotype, 18.2%, was found in comparison with its frequency in similar patients without AH (69.2%).

Conclusions. Thus, The study of the frequency of a combination of genotypes 4G/4G, e4/e4, and e2/e3, potentially dangerous for CHD, showed a statistically significant relationship between the combination of 4G/4G and e4/e4 genotypes with the presence of HF in patients with CHD.

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BIOMATERIALS FOR MEDICINE

LKALI-BASED SURFACE MODIFICATION OF TITANIUM 3D SCAFFOLDS

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Introduction. 3D Ti6Al4V implants with triply periodic minimal surface (TPMS) structures are new generation in the medical industry. Due to their biomimetic architecture, porous titanium materials exhibits a great potential in medical fields as orthopedic implants. Porous scaffolds could mimic natural substrates by the regulation of pore geometry and surface area that will suitable for cell attachment, migration, and proliferation. But the issue of improving surface osteocompatibility remains open.
The osteocompatibility of implants can be enhanced by surface bioactivation. One of the simple and cheap surfaces modification methods is alkaline treatment. Obtained titanate coating enhances surface morphology, increases wettability and mineralization process based on our previous study.

Aim. The aim of our research was to evaluate the bioactivity of Ti-3D TPMS scaffolds with alkali-based surface modifications.

Materials and methods. All implant surfaces were received alkali-based treatment or were left untreated (controls). The sterilized scaffolds were placed in a separate well of a 24-well cell culture plate. Human umbilical cord mesenchymal stem cells (UCMSC) were plated at a density of 20 000 cells/cm ^{2}. A resazurin reduction assay evaluated cell viability at 1st, 3d and 5th day of cultivation. The fluorescence microscopy assay confirmed cells adhesion.

Results. Resazurin reduction assay did not show notable differences in the cell viability in the control and experimental group at first-day cultivation. However, the proliferation rate of the UCMSC cells was higher than the control wells after 5 days of cultivation. DAPI staining revealed cell adhesion to the scaffold surfaces in both control and experimental groups.

Conclusions. The alkali-modified surface demonstrate biocompatibility and bioactivity based on cell proliferation data. The submicron-structured alkali-titanate layer is a promising treatment for Ti-based surface modification.

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VISUALIZATION OF $TI_3C_2T_X$ MXENES IN EUKARYOTIC CELLS BY TRANSMISSION ELECTRON MICROSCOPY

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Introduction. MXenes are 2D nanomaterials that possess unique properties considered promising for treatment of cancer via a photothermal therapy approach. It was shown that MXenes can interact with eukaryotic cells. This has prompted further experiments to ascertain the exact localization of these nanomaterials within the linving cell.

Aim. We aimed at investigating localization of $Ti_3C_2T_X$ MXenes in cultured eukaryotic cells.

Materials and methods. Chinese hamster ovary (CHO) cells were grown on metallic grids used in transmission electron microscopy (TEM). The grids were supplied with thin carbon films to retain the cells. TEM grids of variuos compositions were employed. Cells were loaded with MXenes, fixed, dehydrated and prepared for TEM experiments by contrasting agents.

Results. TEM grids made out of Cu showed high toxicicty for the cultured cells. We then attempted to grow cells on plastic cell culture plates covered with the carbon film followed by dissolving the plastic support by chroloform to release the film and placing the film with the cells onto the grid. However, this approach gave unsatisfactory results. We then screened TEM grids made of other materials and found that the Pd grids were tolerated by cultured cells. We found that MXenes could be detected by TEM in cultured cells seen as flakes within the cell structures.

Conclusion. TEM can be used as a tool for visualization of MXenes within the cells. Cu and Ni grids are toxic for the cells, while Pd grids can be used in cell cultures. Currently, we investigate intracellular localization of MXenes under variuos physiological conditions.

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MODELING THE ECOTOXICITY OF NANOMATERIALS

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Introduction. The current growth trend of the market for nanomaterials for medicine exacerbates the problem of their safe use. It is generally accepted that most nanomaterials are not hazardous by themselves. However, there is still uncertainty regarding nanosafety. Consequently, nanosafety should be assessed using model systems and organisms that are as close as possible to natural ecosystems. In this regard, the question of searching for model organisms for studying the ecotoxicity of engineered nanomaterials is actualized.

Aim. To analyze scientific literature which describe various methodologies correlating individual properties of nanomaterials and their biological influence, taking into account the position of model organisms in the hierarchy of the ecosystem.

Materials and methods. Analysis of sources using the electronic resource library of SumDu (scientific databases EBSCO, Scopus) and open scientific database PubMed.

Results. Various methodological approaches are used to study the behavior of nanoparticles (NPs) in the environment and assess the degree of their toxic effect on living objects, which consider, firstly, the physical and chemical properties of NPs. In addition, the influence of some environmental factors (ionic strength, temperature, pH, salinity, etc.) is not excluded.

In numerous sources, attention is focused on aquatic ecosystems, which are more susceptible to pollution by NPs. In this regard, the necessity of using simple aquaorganisms for assessing the toxic effect of NPs on biosystems is substantiated. Bacteria and fungi found in natural aquatic ecosystems are often used for biotesting NPs. Recent *in vivo* studies have shown that microbiota can enhance the production of extracellular polysaccharides in response to exposure to NPs. The absorption processes of various NPs by crustaceans *Daphnia magna*, polychaetes *Nereis diversicolor*, and freshwater algae *Chlorella vulgaris* and *Ochromonas danica* have been well studied. The mode of nanomaterial biodegradation is particularly helpful in the certification of newly engineered nanomaterials.

Conclusion. The variety nanomaterials for medicine, the growth of the arsenal of which is generally recognized and dynamic, makes it necessary to use express, economically notable, and reliable biotesting to minimize the toxic effect on the environment. From the point of view of the authors of this work, simple life organisms can provide a practical assessment of the ecotoxicity of NPs.

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THE CORROSION BEHAVIOR OF MG-BASED SAMPLES DEPENDED ON SOLUTION COMPOSITION

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Introduction. Plasma electrolytic oxidation of pure Mg could provide the formation of low dissolution porous oxide coating in silicate-based baths. Corrosion resistance is the main characteristic of obtained coatings for Mg-based implants. There are several methods for corrosion rate measurements as weight loss, volume loss, hydrogen evolution, visual and electrochemical methods. Though these methods often give different rates. The imitation in-vivo conditions in the in-vitro tests have difficulties before analyzing the corrosion behavior of a degradable material. This is connected with corrosion behavior influenced by different environments.

Aim. The aim of our research was to compare the mechanism of degradation silicate-based coatings on Mg-based implants.

Materials and methods. Our study attempted to examine the corrosion behavior of Mg-based samples with silicate coating in a different environment. Samples were immersed in three different solutions: cell culture media DMEM/F12, PBS (phosphate buffer saline), and saline. The surfaces of the samples were examined and characterized with an optical microscope, scanning electron microscopy, weight loss measurement.

Results. It was observed that the corrosion in-vitro was visualized macroscopically by the ganging of the surface color. The silicate coating dissolved in all solutions. Local sites of corrosion were observed in the case with saline and PBS solutions. The degradation rate of the samples in saline solution was lower compared to other solutions.

Conclusion. Magnesium and its alloys have unpredictable corrosion in DMEM/F12 and PBS solutions mainly due to the presence of numerous ions in the fluids (e.g., Na+, K+, Ca2+, CO32+etc.). Therefore, corrosion prediction is a complicated task. Consequently, to study the corroded surface chemistry we have to conduct additional EDS (Energy-Dispersive Spectroscopy) test.

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OPTIMIZATION OF CONDITIONS FOR SUBNORMOTHERMIC AND HYPOTHERMIC TREATMENT OF MSCS AS BIOMATERIAL FOR EXPERIMENTAL MEDICINE

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Introduction. The development of cell therapy and experimental medicine requires the use of storage technologies for cells, tissues and bioengineered constructions. Mesenchimal stem cells (MSCs) have shown great potential in the treatment of various diseases. However, despite a sufficient number of studies on the storage of MSCs at positive temperatures, the optimal conditions for short-term storage in subnormothermic and hypothermic conditions, allowing to obtain high indices of cell viability, have not been studied enough.

Aim. Search for optimal storage conditions for MSCs at positive temperatures with maximum preservation of their morphofunctional characteristics for use as a biomaterial in experimental medicine.

Materials and methods. MSCs from mice placentas (PMSCs) were isolated by enzymatic method, cultured at a concentration of 2×10^5/hole in a CO_2 incubator at 37°C in an atmosphere of 5% CO_2 for 10 days. For hypothermic (4°C, HS) or subnormothermic storage (20°C, SNS) of cells, DMEM culture medium enriched with 10% FBS was used. PMSCs were stored in 10 ml polystyrene tubes with a non-adherent surface at a concentration of 2×10^5/ml. The concentration of PMSCs in the suspension, their viability and cultural characteristics were assessed after 1, 2, 3 and 4 days of storage.

Results. The concentration of PMSCs in the suspension, their viability, adhesion ability and proliferative activity remained at the control level at SNS for 3 days. After 4 days of SNS, a slight decrease in the rate of monolayer formation in culture was observed.

The level of PMSCs recovery after HS was lower: after 1 day of storage, there was a significant decrease in concentration of cells in the suspension, their viability, adhesion ability, and the ability to form a monolayer in culture. After 2 days of HS the cells lost their ability to proliferate and form a monolayer.

Conclusion. PMSCs, as a biomaterial for use in experimental medicine, can be stored in culture medium at a temperature of 20°C for up to 3 days while maintaining high indices of viability, concentration and cultural characteristics.

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POSSIBLE REDUCTIVE ABILITY OF MXENES WITH CULTURED CELLS

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Introduction. MXenes is a unique class of layered-structured metallic materials with attractive features and wide applications in many fields. Determination of their cytotoxicity and biocompatibility in cell cultures is the first step to make use of MXenes in living systems. Consequently, evaluation of cell viability is needed to investigate any possible influence of MXenes in cells and tissues.

A resazurin reduction assay offers a simple, rapid and sensitive solution for measurement for the viability of both mammalian cells and bacteria. Living cells can reduce the nonfluorescent dye resazurin to the strongly fluorescent resorufin. The output of the reaction is proportional to the number of viable cells over a wide concentration range. However, it was shown that MXenes can have reductive capacity by themselves. Therefore, its influence on resazurin reduction assay and consequently measurement of cell viability is possible.

Aim. We aimed at investigating possible autocatalytic reductive capacity of MXenes on resazurin without influence of living cells.

Materials and methods. Two MXene preparations from two different sourses were employed. A wide range of concentrations were used. MXenes were mixed with resazurin in cell culture medium and incubated in a cell culture incubator for various times.

Results. We observed weak reduction of resazurin after 24 hours of incubation. After 5 days of incubation we detected clear reduction of resazurin by MXenes. The degree of this reduction however was far lower than in experiments with the cells.

Conclusions. We hypothesized that reduction of resazurin in the presence of living cells is brought about by certain intracellular enzymes, released into the medium after cell death. We currently investigate a possible mechanism of this effect. We suggest that the results of the cell metabolic assays should be interpreted with care due to possible autocatalytic reduction of resazurin with MXenes.

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CHARACTERISTICS OF ELECTROSPUN CHITOSAN NANOFIBROUS MEMBRANES WITH DIFFERENT SOLVETS

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Introduction. Nowadays, the study and use of naturally occurring polymers have gained increasing attention. Chitin and chitosan are the representatives of this structure. They are characterized by relevant to the present properties: high biological activity and compatibility with human, and animal tissues, environmental safety, the potentially far-reaching scope of application in environmental protection activities. Chitin and chitosan and their derivatives both have fiber- and film-forming properties due to the natural polymers in their structure.

Aim. The aim of the study was to evaluate and characterize electrically spun nanofiber chitosan membranes that were made in various concentrations and with various solvents.

Materials and methods. 10 ml of 99.9% acetic acid, 1,6 g of chitosan powder, and 1,6 g of polyethylene glycol (PEO) were mixed. To get the first sample, we firstly dissolved 0,2 g of polylactic acid (PLA) in 5 ml of chloroform (after dissolving the excess chloroform was removed). Afterward, we mix half of the basic one with the dissolved PLA. The second sample was received by combining the rest of the basic solution with 1,2 g of polyethylene glycol (PEG). Two membranes obtained via the electrospinning process were examined with a scanning electron microscope (SEM).

Results. 100-299 nm fibers in diameter dominate for both samples. The bigger the size of the pores is in both samples, the less their number is. The quantity of 100-199 nm-sized fibers is in the second sample three times less than in the first sample. The amount of 200-299 nm-sized fibers is twice as big in the sample with PEG. The number of pores sized 0-99 nm^2 in the sample with the addition of PEG is bigger about two times, as well as pores sized up to 300-399 nm^2.

Conclusions. Evaluating the samples, we have got nanofibers in a range of sizes up to 499 nm. The size of the obtained fibers and pores depends on the solution composition. Chitosan nanofibers with bigger diameters and a more uniform distribution of both parameters (fiber diameters and porosity of chitosan membrane) are observed in the PEG added sample.

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INHIBITION OF BIOFILM-FORMING BY SILVER NPS

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Introduction. Enterococci are opportunistic bacteria that are natural inhabitants of the cavity and intestines. *Enterococcus faecalis* (*E.faecalis*) is the most common pathogen that causes persistent infection of a root canal. The lack of response to traditional treatment is due to the formation of a biofilm inside the canal. Microorganisms in the biofilm have increased resistance to antibacterial preparations, disinfectants and the host's immune system. Therefore, it is necessary to investigate the effectiveness of new antimicrobial agents. Silver nanoparticles (AgNPs) have been known as a powerful agent with antimicrobial activity over several decades. Therefore, we decided to investigate the influence of AgNPs on the E.faecalis biofilms formation.

Aim. To determine the effect of Ag NPs on the formation of E.faecalis biofilms.

Materials and methods. AgNPs were provided by Nano Pure Co (Poland). The strain of E.faecalis was isolated from patient. The glass slides were placed individually in Muller Hinton broth and inoculated with *E. faecalis* at a concentration of 10^6 CFU/ml. Then AgNPs were added to the samples at the AgNPs concentration equals to 1 MIC and incubated for 1, 2, and 3 days. Then the samples were removed from the medium and fixed with 2,5 % glutaraldehyde and dehydrated with a series of ethanol solution 50%, 70%, 80%, 90%/. After that the samples were coated with silver and examined by SEO-SEM Inspect S50-B microscope.

Results. In control samples there was a formation of the structures formed by adherent bacteria and extracellular polimer matrix at 1, 2, and 3 days of incubation. The typical stages of biofilm formation are observed: adhesion, fixation, aggregation, and dispersion. In the treated samples, we revealed the different degreees of the biofilm structure formation. Coincubation of the bacteria with AgNPs within 1 day caused partial biofilm destruction. Some bacteria were still observed adhering to the glass slides. Incubating of AgNPs with E.faecalis for 2 and 3 days shown whole destruction of the biofilms and we revealed only cells with altered shape and structure.

Conclusions. Thus, the Ag NPs prevent the formation of biofilms of E.faecalis by inhibiting their growth and reproduction. This indicates that AgNPs can be used for prophylactic biofilm formation.

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PHOTOTHERMAL EFFECT OF $Ti_3C_2T_X$ MXENES WITH A PULSED LASER IN VITRO

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Introduction. MXenes are a large family of two-dimensional (2D) transition metal carbides and nitrides. MXenes exhibit strong absorption in the near-infrared (NIR) region, including wavelengths that are in the range of NIR biological windows (650 to 1350 nm), and possess a high photothermal conversion efficiency. Consequently, they show good potential for development of anti-cancer treatment via a Photothermal therapy (PTT) approach.

Aim. We aimed at investigating conditions for the $Ti_3C_2T_X$ MXenes to show selective photothermal effect with a pulsed laser with cultured cells in-vitro.

Materials and methods. CHO (Chinese hamster ovary) cells were grown in 96-well plates at various densities and incubated for 24 hr with MXenes at various non-toxic concentrations. A pulse laser at 1064 nm was used. Cell viability was evaluated by optical microscopy and resazurin reduction assay.

Results. We established concentrations of MXenes and doses of irradiation which efficiently killed cultured cells loaded with MXenes while leaving the control cells unaffected. The effect depended on the concentration of MXenes and on the cell density. Intriguingly, the moderately affected cells maintained their metabolic activity immediately after irradiation, while losing it after overnight incubation. We postulated that such treatment induced apoptosis, which was executed during hours after treatment. We also noticed that excessive laser treatment instantly “fixed” the cells, rendering them looking like if they were still normal under microscopic investigation while they were not metabolically active (dead).

Conclusions. Irradiation with the pulsed laser at 1064 nm can be used for development of PTT protocols.

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SIMULATED BODY FLUID (SBF) ASSAY FOR BIOACTIVITY INVESTIGATION OF 3D TI6AL4V SCAFFOLDS

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Introduction. Triply periodic minimal surface (TPMS) Ti-based materials demonstrate good prospects for orthopedics and dentistry applications. Porous 3D structures have smooth infinite surfaces that partition the space into two labyrinths without self-intersections and are periodic in three independent directions. Ti6Al4V powder is often used for bone implant production due to additional functionality, modulus of elasticity, and strength. Therefore, 3D materials with excellent anti-corrosion properties are very close to the human bone tissue and can manufacture long-term bone implants. The implant surface characteristics define a significant role in the first stages of the regenerative process. Biocompatible properties mainly depend on surface bioactivity

Aim. The aim of our research was to assess the bioactivity of 3D Ti6Al4V scaffolds surface by SBF immersion test.

Materials and methods. 3D Ti6Al4V scaffolds with TPMS Primitive topology were manufactured by a Concept Laser Mlab Cusing R selective laser melting (SLM) machine (Lichtenfels, Germany) from medical certificated DIN EN ISO 22674 Rematitan® CL powder (Ispringen, Germany) (Ti - 90%, Al - 6%, V - 4%). The size of the minimal pore was 675 μm. Samples were immersed in 50 ml of the SBF for 7 and 14 days at 37 °C. Samples were washed with distilled water and air-dried at 45 °C. The tested samples' surface morphology and chemical composition were investigated by Scanning Electron Microscopy (SEM) with an energy-dispersive X-ray spectrometer (EDX).

Results. There was no evidence of hydroxyapatite crystallization after 7 days of immersion in SBF. However, the formation of the Carbon-based pellicles was observed. The nucleation of the first Ca-P deposits is detected at 14 days of immersion. They are located between spheres representing the macro surface structure of the 3D samples.

Conclusions. SBF is a powerful tool for the in vitro evaluation of the apatite-forming ability of implant materials and its bioactive properties. Results of our investigation point to the requirements of the additional surface treatment to enhance their bioactive properties.

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POST-GRADUATE STUDENTS AND YOUNG SCIENTISTS SECTION

MORPHOMETRICAL ANALYSIS OF SEROUS OVARIAN CARCINOMA WITH PSAMMOMA BODIES

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Introduction. Psammoma bodies (PBs) are calcined structures with a concentric lamellar structure. These laminar bodies are characteristic of low- and high-grade serous papillary ovarian carcinomas with an incidence of 100% and 50%, respectively. They begin to develop in the early stages of carcinogenesis, which is important in the early and / or differential diagnosis of ovarian tumors.

Aim. The work is to carry out morphometrical analysis of the tissues serous ovarian carcinoma with psammoma bodies.

Materials and methods. We have analyzed the samples from 30 serous ovarian carcinoma patients by using histology and histochemistry. All photos were captured with the digital visualization system based on Zeiss Primo Star microscope with digital camera ZEISS Axiocam ERC 5s and software package "Zen 2.0" (Carl Zeiss, Germany). Classification of the size of psammoma bodies was carried out using the method of ROC analysis. The graphical representation of statistical analysis results was performed using the GraphPad Prism 7.04.

Results. The most common of PBs were fibrous-based tumor papillae of serous ovarian carcinoma and tumor detritus. A significant amount of PBs was in the thickness of the connective tissue of the tumor nodes, as well as the adjacent intact tissues of the ovaries. In some cases, PBs was surrounded by remnants of vascular capillary walls. PBs had a layered structure, often represented by fragments and debris that stored the primary structure of the biomineral object. The amount of PBs in tumors and ovarian tissue ranged from 1 to 200 units. In our study, the size of the PBs of serous ovarian carcinoma ranged from 12.62 to 493.67 μm. Using ROC analysis and construction of a heat map, we investigated the distribution of PBs in the studied group of samples of serous ovarian carcinoma. In general, PBs by size characteristics can be divided into 3 groups: large - more than 200 μm (visible on ultrasound), 71 - 199 μm - medium, have satellites and a tendency to merge, and small - less than 70 μm.

Conclusions. PBs is an important diagnostic feature of the cancer ovary, which can be used in ultrasound and histological methods. PBs can be divided into 3 groups by size - large, medium, and small.

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MORPHOLOGICAL ANALYSIS OF MENINGIOMAS WITH CALCIFICATION BY USING HAEMATOXYLIN-EOSIN, VAN GIESON, AND VON KOSSA STAINING

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Introduction. Psammomatous meningiomas are characterized by an accumulation of psammoma bodies − microcalcifications, which are a manifestation of pathological biomineralization.

Aim. This research aims to study the basic morphological properties of calcifications in tumors of the dura mater.

Materials and methods. We examined 30 samples of psammomatous meningioma with calcifications by using haematoxylin and eosin, Van Gieson and von Kossa staining.

Results. Meningiomas are rubbery or firm, well-demarcated rounded masses that feature broad dural attachment. The longitudinal section of meningioma's revealed the presence of solid biomineral deposits, which were cut with effort.

Histological examination shows uniform tumor cells, which form lobules. They have oval nuclei with delicate chromatin that show central clearing or the formulation of cytoplasmic-nuclear inclusions.

Van Gieson stain reveals the presence of spindle cells, which forming parallel, storiform, and interlacing bundles in a collagen-rich matrix. Also, we can see thin collagenous septae, which partly demarcate tumor lobules. The neoplastic cells have a transitional appearance with whorl formation.

Psammoma bodies were painted in brown with silver salts by using von Kossa staining. Some tumors are almost entirely replaced by psammoma bodies. That confirms that the mineral composites in the tissue of psammomatous meningiomas contain calcium phosphates.

Conclusions. Some tumors are almost completely replaced by psammoma bodies, and tissue has a brownish color. A significant amount of connective tissue in psammomatous meningiomas forms whorls and collagen bundles, which were established using Van Gieson staining. The mineral composites in the tissue of psammomatous meningiomas contain calcium phosphates.

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EXPRESSION OF MARKERS OF INFLAMMATION AND APOPTOSIS IN SALIVARY GLAND TUMORS

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Introduction. Tumors of the salivary glands are morphologically very diverse and according to the WHO classification there are 11 benign and 20 malignant types of tumors. They are all of different genesis and histological structure. In addition, stones are often found in many tumors (macroscopically or by histological examination), which according to many authors are formed on the background of chronic inflammation.

Aim. To investigate the expression of markers of inflammation and apoptosis in the tissues of benign and malignant tumors of the salivary glands.

Materials and methods. 20 samples of salivary gland tumors (10 benign and 10 malignant). To achieve the aim, research methods such as histological, immunohistochemical, statistical data processing and literature review were used. Among the markers Bax (as a marker of apoptosis), CD68 (to detect chronic inflammation), MPO (as a marker of acute inflammation) were used.

Results. Histological examination besides the morphological confirmation of the tumor process revealed also that the salivary glands were enlarged, had phenomena of inflammation, plethora and edema, signs of chronic inflammation and sclerotic changes in the tissue, systemic dilatation of the ducts, focal mixed cell inflammatory infiltrates and dyscirculatory changes. In the immunohistochemical study, weak (25%) MPO expression was present in only 8 of 20 cases (35%). Bax expression was detected in 80% of cases (more pronounced in the parenchyma), with a greater amount of expression in the tissues of benign tumors of the salivary glands. CD68 expression was present in 100% of cases and was pronounced in both the stroma and parenchyma of the gland.

Conclusions. Analyzing results of the research we can make the following conclusions:

1. In the tissues of tumors of the salivary glands there is no acute inflammation.
2. The processes of apoptosis develop in both benign and malignant tumors, but in benign tumors this process is more pronounced.
3. In all tumors there are pronounced signs of chronic inflammation, which is confirmed by both histological and immunohistochemical methods.

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DYNAMIC FLUID CIRCULATION SYSTEM FOR INVESTIGATION SURFACE ADHESIVE PROPERTIES

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Introduction. Adhesive properties are an important feature of biomaterial surface in implant osseointegration. Following parameters can influence to this process: morphology, topography, roughness, chemical composition, surface energy and composition, chemical potential, residual stress, impurities, and the presence of metallic and nonmetallic compounds. The cause of adhesion is the molecular attraction of the contacting phases or their chemical interaction and to control surface properties we can increase the success adhesion rate of implants. There are several methods for adhesion properties as peel tests, scratch tests and blister tests. However, these measurements do not allow to characterize surface behavior at the physiological conditions.

Microfluidic devices are one of the in-vitro biosystems. Nevertheless, it is widely used for cancer detection, tumor cell isolation, and screening of therapeutics.

Aim. To develop a simple and effective dynamic test with several containers in a simulated physiological environment under constant flow rate and medium exchange.

Materials and methods. The construction of the dynamic fluid circulation system consisted of connected containers by the medical silicone tubes, and a peristaltic pump mimics the liquid flow. The dynamic flow conditions were chosen according to the physiological model to test the pure Mg samples and with silicate-based coating. The dynamic system were filled with 10^5 CFU/mL *S.aureus* suspension in nutrient broth at 37°C. The adhesive properties were defined via surface printing on solid agar after the cultivation of 2, 4, and 6 h, followed by the streak plate technique.

Results. The bacterial adhesion was quantitatively determined by counting the number of colonies. Colonies were not found in the Mg groups at all timelines. In comparison, there were small colonies of 10^2 CFU/mL on the Mg samples with oxide coating at 2 and 4 hours. And it has increased slightly to 10^3 CFU/mL after 6 hours.

Conclusions. Developed setup demonstrated a promising in vitro method to investigate adhesion properties at in-vivo conditions by maintaining physiological circulation. This is particularly important concerning the examination antibacterial capacity of the surfaces.

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ANALYSIS OF TURNER SYNDROME (TS) ON CHILDBIRTH

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Introduction. Turner syndrome is genetic disorder affecting girls and women. Although it is a genetic disorder, it's not usually inherited except in rare cases. The cause is a completely or partially missing X chromosome. It is characterized by short stature, ovarian failure and cardiac defects. Pregnancies in women with TS are rare and mortality rate is on a high level due to cardiovascular disease.

Aim. To analyze and compare childbirth outcome in women with TS and women in the general population, describing characteristics of newborn with TS, evaluation of obstetrics and neonatal outcomes in women and knowing if morbidity increased after delivery.

Material and methods. For the study, 115 women with TS were analyzed and compared with a reference group of women from the general population.

Results. A total of 115 women with TS karyotype gave birth to 208 children. Women with TS gave birth to fewer children than the reference group. No maternity mortality and no miscarriages registered. More TS women had preeclampsia during their first pregnancy. A lady suffered from aortic dissection in week 32 of gestation but she and the baby survived.

In children of women with TS karyotype, gestational age was shorter, preterm delivery was more common, birth weight of children were lower, more children of TS women were delivered by cesarean section than in the reference group, mortality rate in women of TS group were 1.5% (three of 202, 1 stillbirth and 1 neonatal mortality and 0.9% in reference group. Birth defects were 4.5% in the TS group and 3.8% in the reference group. Congenital cardiovascular defects are a common problem in women with TS.

Conclusions. Obstetrics outcomes in women with TS karyotype were mostly favourable with shorter gestational age but similar size of birth. TS women with spontaneous pregnancies being predominantly mosaics may represent a healthier group of women but more neonatal risks. Women with TS are recommended adequate counseling, prepregnancy cardiac screening and close surveillance before, during and after delivery.

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OSTEOPONTIN OVEREXPRESSION IN INVASIVE DUCTAL BREAST CARCINOMA WITH MINERALIZATION

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Introduction. When conducting a mammogram of the breast, great importance is attached to the detection of calcifications, which may indicate a malignant process. The study of microcalcifications in breast tissue may have a great diagnostic value in the early stages, as recent studies have identified biominerals in the tissue of invasive ductal breast cancer (IDBC) that may influence on metastasis and prognosis in such patients.

Aim. To investigate the expression level of osteopontin (OPN) in the tissue of IDBC with the presence and absence of pathological biomineralization.

Materials and methods. For the study, 30 samples of breast cancer tissue (BCT) with biomineralization (group I) and 30 samples of BCT tissue without biomineralizates (group II) were taken.

Histological and immunohistochemical (IHC) studies were used in the study.

Anti-Osteopontin antibody was used in the IHC study. Positively stained cells were considered to have a complete stained cytoplasm and membrane.

To evaluate the statistical analysis of the obtained results, we used Microsoft Excel 2010 with the application AtteStat 12.0 (determination of the average value of OPN expression and the significance of the difference (p)). Morphometric studies of micropreparations were performed using the software "SEO Scan ISH 285 AK-F IEE-1394" (Ukraine). Quantitative assessment of IHC was performed by counting immunopositive cells in the field of view with a diameter of 1000mcm. Graphical representation of data was performed in the environment of Prizm 7.0.

Results. The average expression of OPN in BCT with biomineralization ($91,745 \pm 3,22$) is higher than in tumor tissue of the control group ($76,62 \pm 3,26$) with a significant difference between these indicators according to Student's test ($p<0.01$).

The presence of pathological biomineralization leads to the high level of OPN protein expression in the tissue of IDBC. On the other hand, samples of IDBC without calcifications have significantly lower expression level of these proteins. It is well known that OPN is an acidic phosphoprotein, which is expressed in mineralized tissues and it inhibits hydroxyapatite formation by binding to the surface of the crystals.

Conclusions. OPN overexpression may be regarded as a protective tissue response to the development of ectopic calcification.

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REVENTIVE OPPORTUNITIES OF TRAUMATIC DELIVERY

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Aim. To evaluate the effectiveness of the medication «Gynodek» in labor as prevention of obstetric trauma and antiseptic regenerative and regulatory effect in the postpartum period.

Methods and materials. Pro- and retrospective analysis of pregnancy and childbirth histories, statistical analysis of maternal and neonatal birth injuries with and without the use of «Gynodek». There were 500 women in labor who took part in the study. The first group (250 women) included women who used the drug «Gynodek» in childbirth an the postpartum period. The second group (250 women) consisted of those who did not use «Gynodek».

Conclusions. 1.In the first group of 250 parturient women, 109 cases of traumatization of women in childbirth were identified, In the second group: out of 250 parturient women, 144 cases . The injury rate was 43,6% in the first group, and 57.6% in the second group.

2. . In the first group of women, the duration of the second stage of labor averaged 40 ± 10 minutes. In group II-was 50 ± 10 minutes.

3. due to the shortening the duration of the second stage of labor, higher Apgar scores were detected in newborns at 1 and 5 minutes of life in the first group compared to the second. In group I these scores were 7 ± 2 points at the first minute and 9 ± 1 point at 5 minutes of life. In group II these scores were 6 ± 2 points and 8 ± 1 point, respectively.

4.In the first group 73 parturient women with inflammatory smear type were found, in the second group the number was 88 women. In the first group, the objective symptomatology of inflammatory vaginitis in the postpartum period was decreased.

5. Subjective reduction of burning, irritation, and afterbirth pain in the first group was reported by 183 women (73.2%), and by 117 women(46.8%) in the second group. The use of the drug «Gynodek» reduces the rate of maternal and fetus trauma, shortens the duration of the active pushing phase, increases the assessment of newborns on the Apgar scale, reduces the duration, and eases the subjective esthesia of women in labor with inflammatory diseases of the genital tract after childbirth, collectively, it minimizes the length of stay in hospital for mother and child.

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FUNCTIONALLY ENRICHED GENE SUBSETS AMONG DIFFERENTIALLY EXPRESSED GENES IN HUMAN PLACENTA DURING THE COURSE OF NORMOTENSIVE PREGNANCY BASED ON OPENLY AVAILABLE GENE EXPRESSION MICROARRAY DATA

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Introduction. The placenta is a developing organ providing tight interrelation between the mother and fetus during the whole period of gestation. The main driver of development is gene expression. Detailing the placental tissue transcriptome changes underlying normal pregnancies could provide a valuable resource for genomic studies related to placental dysfunctions.

Aim. To utilize publicly available gene expression raw data to identify differentially expressed genes in the human placenta between second and first and third and second trimesters of physiological gestation and provide the biological interpretation of the results.

Methods. We downloaded gene expression data from our IGEA database available at http://igea.sysbio.org.ua/ (77 samples, 8 datasets, collected from open access data), integrated raw data by cross-normalization and batch-effect removal. We used: generalized linear models for differentially expressed genes (DEGs) identification (adjusted p-value (FDR)<0.05, fold change |logfc>1|); fastgreedy algorithm to elicit interrelated gene clusters among DEGs; Gene Ontology and the String web tool to reveal overrepresented differential biological processes and cellular pathways compared to the whole genome.

Results. We identified 253 differentially expressed genes (DEGs) between the second and first trimester (comparison 2_1), 152 up- and 101 down-regulated, and 489 DEGs between third and second trimester (comparison 3_2), 221 up- and 268 down-regulated. There are 4 elicited clusters: immune system process, organ and blood vessel development, cellular response to Zn and Cu ions, and JAK-STAT pathway signaling, in comparison 2_1, and 7 clusters: regulation of response to external stimulus, metabolic processes, tissue morphogenesis, regulation of signaling pathways via transmembrane serine/threonine protein kinase receptors, sodium transport, and transmembrane transport of chloride, and pregnancy-specific beta-1-glycoproteins, in comparison 3_2. Thus, it is the first study of open access and integrated data on gene expression profiles in the human placenta throughout gestation underlying physiological pregnancy.

Conclusion. Our study will serve as a reference database to gain insight into the regulation of gene expression in the developing placentae and to compare with gene expression in placentae from complicated pregnancies.

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PROGNOSTICATION OF OBSTETRIC AND PERINATAL PATHOLOGY IN WOMEN WITH MULTIPLE PREGNANCIES

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Aim. To reduce the frequency of obstetric and perinatal complications in women with multiple pregnancies by developing and implementing evidence-based diagnostic and therapeutic measures in the antenatal period.

Material and methods. 86 pregnant women with diarrheal twins were monitore. On the basis of studying the premorbid background, somatic and reproduktive history, features of the gestational period, leading antenatal risk factors for the development of complications in multiple pregnancies were identified.

Results. An analytical assessment of the importance of reproductive history in the development of gestational complications in women with multiple fertility has suggested that the number of late involuntary miscarriages increases the risk of miscarriage, the high proportion of preterm births in the history of 4 times increases the chances of miscarriage. The less pronounced deviation was demonstrated by the frequency of dead pregnancies, which was 2.6 times higher in multiple pregnancy, ectopic pregnancy, artific abortions.

Among the gestational complications, the threat of abortion in the group with monochorionic twins was noted in 52.7% of cases, with dichorionic twins - 57,0% of cases. Percentage of the threat of preterm labor was 5.8 times higher than the single-pregnancy rate, while in the group with monochorionic twins, its share was in 2.7 times more than in the case of dyhural. Iron deficiency anemia in the second half of pregnancy with multiple fertility was 53.0, which was almost four times the single-pregnancy rate.

Preeclampsia in multiple pregnancy is almost 4 times more frequent (32.9%). The fraction of placental dysfunction with monochorionic twins was 53.3% and 33.8% for dichorionic twins. Fetal growth retardation during multiple pregnancy was 31.5% in monochorionic type, compared with 18.1% in women with dichorionic twins. Fetal distress during pregnancy with monochorionic twins was observed three times more than with dichorionic twins.

The largest number of premature births was found in women with monochorionic twins and three times higher than dichorionic. At the same time, in the group with monochorionic type of placentation, the proportion of very early preterm labor was 4 times higher than that of the dichorionic twins. The frequency of early premature births with monochorionic twins was higher by almost three times - 31.5%, respectively, compared to 13.3%. The high frequency of operative deliveries is 56.4%, which is four times higher than single-pregnancy rates.

Conclusions. The leading antenatal factors of the risk of complications in multiple pregnancy are highlighted.

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THE STATE OF REPRODUCTIVE HEALTH IN WOMEN OF EARLY REPRODUCTIVE AGE WITH HYPERPROLIFERATIVE PATHOLOGY OF THE ENDOMETRIUM

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Introduction. Reproductive health forms the basis of demographic potential and is a necessary prerequisite for population growth, renewal of its quantitative and qualitative composition, which meets socio-demographic needs.

Aim. To study and analyze the dynamics of women's reproductive health in Ukraine as a factor in population reproduction and to study the features of menstrual disorders in Ukraine in 2010-2019. In women of early reproductive age with hyperproliferative pathology of the endometrium without atypia.

Materials and methods. The peculiarities of menstrual function in patients of early reproductive age with hyperproliferative pathology of the endometrium were studied. We examined 84 patients of the gynecological department of the Sumy Regional Clinical Perinatal Center with a diagnosis of hyperproliferative pathology of the endometrium without atypia, who sought medical help during 2017-2020 for hyperplastic processes of the endometrium in early reproductive age (18 to 34 years).

Results. As a result of the conducted systematic analysis it was established: the higher the prevalence of menstrual disorders, the higher the frequency of diseases of the genitourinary system and some gynecological diseases. This is confirmed by the calculated coefficients of correlation of the prevalence of menstrual disorders with the frequency of diseases of the genitourinary system ($r = 0.75$, $p<0.001$), salpingitis ($r = 0.63$, $p<0.001$) and endometriosis ($r = 0.42$, $p<0, 05$).

The assessment of the relative risk of gynecological diseases has shown that the greatest attention needs to be paid to improving the diagnosis of infertility and endometriosis, as well as the prevention and treatment of salpingitis and uterine cancer.

Conclusions. The highest rates of menstrual disorders were found in women with endometrial hyperplasia without atypia and a combination diffuse hyperplasia with endometrial polyps in contrast to patients with only endometrial polyps. Menstrual irregularities can be considered as a marker and indicator of dysfunction of the genitourinary system and the presence of a hyperproliferative process at the prehospital stage.

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ALZHEIMER'S DISEASE AND ASTROCYTES PATHOLOGY

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Introduction. Alzheimer's disease (AD) is a highly heterogeneous disease, and the most frequent cause of cognitive decline. Recent findings have attributed a major role to nonneuronal cells in disease onset and progresion.

Aim. The aim of this study was to analyze the astrocytes cell density (ACD) and astrocytes cell body area (ACBA) in cortical layer I, III and V of brain of patient with Alzheimer's disease.

Materials and methods. A postmortem examination of the neocortex of frontal and temp lobes of patients (1 patient with Alzheimer's disease and 4 patients without brain diseases) was done. The immunohistochemical marker GFAP was used. The count glial cell (at least 100 cells in each cortical layer) in non-overlapping fields at high power magnification (x400) was performed. The area of one field was 66585.8 mm^2. ACD and ACBA was analyzed using ImageJ. The non-parametric Mann-Withey test was done.

Results. The age of patients with AD was 67 years. The average age of patients of second group was 62.5±6.0 years (p=0.56). The ACD in cortical layer I in patient with AD was increased by 2.4 times (298.40 [238.72;343/16] cells/mm^2 versus 126.82 [104.44;149.20] cells/mm^2, p=0.0000), in cortical layer III – by 2.5 times (149.20 [134.28;149.20] cells/mm^2 versus 59.68 [44.79;59.68] cells/mm^2, p=0.0240) and in cortical layer V – by 1.7 times (149.20 [119.36;179.04] cells/mm^2 versus 89.52 [44.76;119.36] cells/mm^2, p=0.0000) compared to patients without this disease. The ACBA in cortical layer I in patients with AD was increased by 1.3 times (65.19 [52.17;80.34] μm^2 versus 51.72 [41.67;64.66] μm^2, p=0.0000), in cortical layer V – by 1.5 times (64.80 [52.30;73.80] μm^2 versus 43.86 [35.61;55.70] μm^2, p=0.0000) compared to patients without this disease. The ACBA in cortical layer III in patients of two group was not differ (58.10 [48.00;71.60] μm^2 and 55.39 [44.96;67.65] μm^2, p=0.41).

Conclusions. Reactive changes in astrocytes in patients with AD were characterized by cell proliferation in cortical layers I, III and V, hypertrophy of interlaminar (cortical layer I) and protoplasmic astrocytes (cortical layer V).

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ANALYSIS OF EPIDEMIOLOGICAL INDICATORS OF BREAST CANCER IN UKRAINE AND SUMY REGION DURING 2016-2020

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Introduction. Breast cancer is the most common cancer diagnosed in women and has remained a global problem for many decades.

Aim. To analyze the epidemiological indicators of breast cancer among women of Sumy region during 2016-2020 and to compare the obtained data with the all-Ukrainian ones.

Materials and methods. Data from the National Cancer Registry of Ukraine were used to analyze the epidemiological indicators of breast cancer. Statistical processing of indicators was performed using the analysis of mean values and the method of standard deviation.

Results. The average incidence of breast cancer in Sumy region for 2016-2020 is 75,7±7,24 cases per 100 thousand population, which is higher by 10,2% compared to the average Ukrainian (68,0±4,45 cases per 100 thousand population). During 2016-2019, there are no clear trends in the dynamics of the incidence rates. However, in 2020 there is a decrease in the Ukraine-wide incidence rate by 14,2%, and in Sumy region – by 22,1% compared to the previous year. The percentage of breast cancer cases detected during preventive examinations during 2016-2020 is higher in Sumy region and is 56,1±2,71% against 46,0±4,74% in Ukraine-wide. This may affect the rate of early detection of lung cancer (stage I-II), which in Sumy region significantly exceeds the average Ukrainian (86,0±2,99% vs. 73,8±1,75%, respectively). The average one-year mortality rate of breast cancer in Ukraine exceeds this rate in Sumy region and is 9,4±0,52% and 7,8±1,21%, respectively. The percentage of coverage with special treatment is almost the same: 80,2±0,57% in Ukraine and 79,8±2,92% in Sumy region.

Conclusions. Sumy region is characterized by higher rates of breast cancer compared to all-Ukrainian rates. In contrast to the incidence rates, the average one-year mortality rate in Sumy region is lower compared to the all-Ukrainian, which may be due to the higher detection rate of breast cancer on preventive examinations and as a result the predominance of the disease in the early stages. The decrease in breast cancer incidence among women in Sumy region in 2020 may be associated with reducing the number of visits to oncologists due to the COVID-19 pandemic and quarantine restrictions. In the near future, this can lead to an increase in the incidence of advanced breast cancer and negatively affect the prognosis of such patients.

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CAN THE CA 19-9 ANTIGEN BE A USEFUL AND EFFICIENT BIOMARKER IN URINARY TRACT OBSTRUCTION?

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Introduction. Obstructive nephropathy, resulting from urinary tract obstruction during fetal development, represents the most common cause of kidney failure in infants and children. Despite an early intrauterine diagnosis through prenatal ultrasound, the determination of the prognosis of the kidney injury's severity is not well established yet. Therefore, the identification of blood and/or urinary markers to define the progression of renal damage would play an important role in deciding on earlier and more effective therapeutic interventions. Elevated carbohydrate antigen CA19-9 (originally a tumor marker) levels have been described in benign urinary obstruction.

Aim. This study evaluated to which extent this easy-analysis biomarker could help in the earlier diagnosis, especially in doubtful cases, of obstructive uropathies with potential renal damage. We compared it to another biomarker, NGAL, relad to the severity of the obstruction.

Materials and methods. Forty-six female Wistar rats were divided into five groups, each with different patterns of partial urinary tract obstruction: Control group; OIV group: infravesical obstruction; group OIVd: infravesical obstruction with reversal and relief of the obstruction on the 7th postoperative day; group OUu: right unilateral ureteral obstruction; group OUb: bilateral ureteral obstruction. Baseline determination of CA 19-9, NGAL, and creatinine in urine and blood was performed in the rats prior to surgery (T0). Surgical interventions promoted partial obstruction depending on the group. After 14 days, new measurements (T1) of the markers were taken and compared to baseline values. The OIVd group underwent an intermediate collection after clearance (Ti).

Results. There was an increase in the urinary concentration of CA19-9 in all obstructed animals. In the OIV, OUb and OIVd groups, the elevation in T1 and Ti, respectively, reached statistical significance in relation to the T0 value. The changes in urinary CA19-9 were more expressive in the groups OIVd (AUC = 0.71), OIV (AUC = 0.81) and OUb (AUC = 0.77). Relief of obstruction in the OIVd group promoted significant reduction in urinary CA 19-9 values in the final evaluation, with AUC = 0.73. There was no positive correlation between the obstructed groups and serum CA 19-9 levels.

Conclusions. The urinary concentration of CA19-9 increased in the presence of urinary tract obstruction; the performance of urinary CA19-9 as a marker was similar in infravesical (low) and ureteral (high) obstructions, and there was a decline in urinary CA19-9 concentration after clearance.

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PROGNOSTIC FACTORS FOR SURGECALLY RESECTED NSCLC

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Introduction. Amount of malignant tumors are increasing all the time**.** Nowadays scientists are trying to develop algorithm to predict prognosis for patients with malignant tumors as well as found factors that influence on survival in patient that performed surgery. Lung cancer as one of the most common reason of death is not exception.

Aim. To determine prognostic factors that influence on duration of life in patient surgically resected non small cell lung cancer.

Materials and methods. 52 source documents of patients that performed surgery during 2016-2018 with early stages (IB - IIIA) of lung cancer were studied during the period 2016-2021. All patients got 4 courses of adjuvant chemotherapy depending on hystological type of the tumor. Statistic and retrospective methods of data analysis were used.

Results. We found out that 19 out of 52 patients (36,5%) had disease relapse and died during the period of investigation. 15,8% had disease recurrence during the first year after surgery, 47,3% had disease recurrence from one to two year after surgery, 5,3% had disease recurrence from two to three years after surgery, 31,6% had disease recurrence after 3 or more years after surgery. It is important to highlight that period from primer diagnostic and surgery performed was not more then 1 month in all cases. Among died patients men were 94,7%, while woman – 5,3%. All of died patients were smokers with tumor size 5 cm and bigger. Most patients that died (57.9%) were older then 60 years old. In all died patients local or distant metastasis were determined. Most common locations of metastases were lungs, lymphatic nodules of the mediastinum, liver and kidneys. 68,4% of died patient performed right side surgery. Among died patients 42,1% had adenocarcinoma, while squamos carcinoma was determined in 57,9% cases.

Conclusions. We found that among patients that had disease recurrence 68% died during first three years after surgery. During the investigation we also found that poor prognosis has smokers with male gender in the age over 60 years old. Most of them had squamos lung cancer and primary tumor size 5 and more cm on the right side.

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ANTI-MULLERIAN HORMONE AS A MARKER OF OVULATORY DYSFUNCTION IN ADOLESCENT GIRLS

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Introduction. Anti-Mullerian hormone (AMH) is one of the factors that directly affects on the development of gonads in the early embryonic period. Although the role of AMH remains not completely studied, there is an assumption that this factor can cause pathological changes in a female reproductive system. There are some difficulties in establishing a diagnosis of metabolic syndrome (MS) in adolescents. This is due to the peculiarities of reproductive and endocrine systems in this age group. Therefore, it is important to have clear criteria in order not to allow both hyper diagnostic and late detection.

Aim. To determine the level of AMH and analyze its indicators in adolescent girls with MS.

Materials and methods. The research was conducted on the basis of the Sumy Regional Clinical Perinatal Center during 2018 - 2020. In this study 84 girls aged 13 to 19 have taken part. The following groups were formed: 44 girls with MS came into the main group; 40 healthy girls were in control group. For girls in all groups determined the level of AMH in blood serum at the first phase of the menstrual cycle. The research used an immunochemical method with electrochemiluminescence detection with the help of a test system Cobas 600, Roche Diagnostics (Switzerland).

Results. As a result of the analysis in girls of the main group with MS revealed a statistically significant decrease in AMH in comparison with healthy girls in the control group: ± 1.1 ng / ml and 6.5 ± 1.2 ng / ml, respectively. It should be admitted that among girls of the main group with MS, menstrual irregularities were significantly more common. Using a detailed medical history, it was found that 36 (81.8%) girls had pathological age of menarche (<11 years and> 16 years) and / or irregular menstrual cycle. So, the detection of differences in the level of AMH between groups only confirms the presence of disorders of the reproductive system in adolescent girls with MS.

Conclusions. Given the peculiarities of ovarian ultrasound in the first 8 years after menarche, and the lack of clear diagnostic criteria for MS in adolescents, AMH can be used as an alternative marker of ovulatory dysfunction in adolescent girls. Understanding the pathogenic effects of AMH on the female reproductive system suggests that restoring normal levels of this factor will improve reproductive outcomes in women. Therefore, this is a promising area for research.

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DENTISTRY

NANOMATERIALS IN DENTISTRY

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Introduction. Nanotechnology is a way of creating a matter using the method of atom manipulation. More than 166000 articles are made with the tag «nanomaterials» in 2018, and leading countries invest millions for research in that direction. For example, USA – 49 milliards in 2017.

Aim. To investigate the applying of nanomaterials in different dentistry directions, the fundamentally new theoretical conceptions about their future perspectives.

Materials and methods. Analysis of sources was performed with open scientific databases – Google Scholar, Pubmed. Also, using library resources of Sumy State University – Scopus and Web of Science were examined too.

Results. Nanoparticles of metals and their oxides are widely used in endodontics. They are used for increasing efficiency of irrigation and disinfection. The research results suggest that the disinfection properties of zinc nanooxide are similar to the properties of irrigation solutions (5 % NaClO, 2 % chlorhexidine). The nanocomposite scaffolds based on nanoparticles of metals are used for encapsulation of bioactive molecules that stimulate the formation of pulp and dentin tissues.

The nanocomposites are used as restorative materials in therapeutic dentistry. They have antibacterial and remineralizing effects. The addition of nanoparticles to the polymers reduces polymerization stress and shrinkage of composite without changing other properties of the materials.

A completely new concept in restorative dentistry is the creation of "self-healing" adhesive systems using nano-capsulated monomers. In case of crack occurrence these capsules rupture and curing monomers fill the gap, thereby – provides regeneration of destroyed tissues.

Nanomaterials based on calcium hydroxyapatite are widely used in preventive dentistry. They are similar to natural hydroxyapatites crystals, which form inorganic composition of enamel and dentin. They have the most effective remineralization effect, compared to amino fluor and fluor mono phosphate. In addition to the remineralization effect, they reduce the hypersensitivity of the dense tissues of the tooth.

Conclusions. Nanotechnologies can solve a lot of problems in dentistry: to increase the quality of endodontic cure, to enhance effectiveness of caries prevention, to improve composite materials and to introduce fundamentally new curing methods such as pulp regeneration and «self-regenerating» adhesive systems.

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BIOCOMPATIBILITY TESTING OF DENTAL GEL COMPOSITION IN CELL CULTURE

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Introduction. Orthodontic braces treatment causes an appearance of local stress phenomena in the periodontal tissues that requires effective elimination of its harmful effects. It was found that flavonoids which possess pronounced antioxidant and immunomodulatory action reduce, to some extent, the level of stress effects in tissues.

Aim. The aim of this study was to evaluate the effect of three combinations of components of gel composition (GC) on the viability of pseudonormal cells (MTT test) and genotoxicity (DNA-comet assay) in these cells.

Materials and methods. Extemporaneous GC that possesses antioxidant, antimicrobial, anti-inflammatory and immunomodulatory actions has been developed for medical correction of local stressor metabolic disorders in the periodontium. Choline salicylate (CS) was used as a comparison drug. The number of living cells was determined using MTT reagent according to the manufacturer's recommendations (Sigma, Chem Co., USA). Single strand DNA breaks and alkaline-labile sites of DNA were detected using the Alkaline comet assay as described by Tice et al., 2000.

Results. The first sample of GC including gel base and benzydamine hydrochloride (BH) in liquid form, demonstrated toxicity to all cell lines and inhibited proliferation of murine fibroblasts of BALB-3T3 line and macrophages of J774.2 line, however, it did not affect significantly pseudonormal human keratinocytes of HaCaT line. The second sample of GC including BH in powder form, did not demonstrate a statistically significant effect on the proliferation of of keratinocytes and fibroblasts, but inhibited this process in the macrophages. Moreover, the comparative substance (CS) had even more intense effect on cultured J774.2 macrophages than the doxorubicin (1 μg). The third sample of GC including gel base, BH in powder form and flavonoids, as well as the comparator CS, did not show a significant genotoxic effect (percentage of DNA in the tail and OTL) in murine macrophages of J774 line. Maximum genotoxicity (12% of DNA in the tail) was observed in cells treated with a composition containing BG in liquid form.

Conclusions. The presence of flavonoids in the GC minimizes the cytotoxic and genotoxic effects of the BH and allows its implementation as antimicrobial and anti-inflammatory remedy.

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CLINICAL EFFICACY OF LOCAL TREATMENT OF CATARRHAL GINGIVITIS IN ADOLESCENTS AND SMOKERS IN ADOLESCENTS

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Introduction. Tobacco smoking is very common among adolescents and children, every third child is 12-14 years old and every second child over 15 years old smokes cigarettes (Picas OB, 2016). Adolescents are known to be most vulnerable to the effects of tobacco smoke, its toxic and allergenic effects, due to the immaturity of functional physiological mechanisms of regulation of organs and systems (Goniewicz ML et al., 2014; Zakut Yara Salah et al., 2021).

Aim. The study was to investigate the clinical efficacy of topical treatment of catarrhal gingivitis in adolescents and adolescents who smoked.

Materials and methods. To assess the clinical effectiveness of the proposed treatment complex, 78 adolescents and adolescents aged 15 to 24 years were examined and treated. Patients after a comprehensive dental examination, depending on local treatment, were divided into two observation groups: the main group consisted of regular smokers and received the proposed treatment complex - 48 people; the comparison group included people who smoked regularly and received standard treatment - 30 people. Clinical dental examination included: examination, determination of indices.

Results. Clinically, there was a significant improvement in the condition of periodontal tissues, which is confirmed by index data. Motivational conversations were held with all participants of the study on the dangers of smoking and the need to quit smoking, because without smoking cessation there will be no positive results in the treatment of periodontal diseases. The value of the PMA index before treatment averaged 37,8±2,11% and varied after treatment in the main group to 3,1±1,43%, in the comparison group, respectively, 6,4±2,32%. The bleeding index was 1,68±0,02 before treatment and after treatment 0,21±0,01 in adolescents of the main group and 0,69±0,03 in subjects of the comparison group. The indicators of the Green – Vermillion hygiene index varied from 1,85±0,04 to 0,15±0,03 points (main group) and 0,36±0,02 points (comparison group). The results of clinical observation during treatment showed high efficiency of the proposed method.

Conclusions. Thus, the use of the proposed complex reduces bleeding gums, eliminates the inflammatory process in periodontal tissues, improves tissue regeneration, increases the clinical effectiveness of local treatment.

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OPPORTUNISTIC INFECTIONS THAT ASSOCIATED WITH COVID-19 AND ITS RELATIONSHIP WITH CAVITY IN IMMUNOCOMPROMISED PATIENTS

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Introduction Commonly, when a person is infected with a viral or bacterial infection, the body becomes weak, emaciated. As a result of that, opportunistic infections like fungi and bacteria enters the body greedily. And as a dentist, i can say that most likely in the case of coronavirus as a virus that affects the immune system, respiratory tracts and lungs, this opportunistic infection can infect the cavity, some symptoms appear on the gums, tasting and swallowing

Aim. To study the impact of opportunistic infections that associated with COVID-19 and its relationship with cavity

Materials and methods. The experimental study was performed on Some immunocompromised patients that got infected with coronavirus in some Arabian countries.

Results. The increased case reports of opportunistic infections in COVID-19 patients raise an important concern, especially for patients with chronic diseases and who received immunosuppressive treatment therapy like cancer and so on. Among the opportunistic infections, i found that fungal infections like Aspergilli, Candidiasis and Cryptococcosis account for the most case reports in COVID-19 patients. Other reported pathogens were related to viral, bacterial, protozoa or helminth infections.

The presence of fungal infection along with COVID-19 made the prognosis poor, increasing the risk of severe symptoms that occurred in two patients, and even it leads to death. As a result of a weak immune system in some cases, fungal infection can occur even after they have recovered from COVID-19.

Conclusions. If the patients are suffering from a chronic illness or are on any kind of immunosuppressant, their immune system is compromised, and they are high-risk. This means if patient is to contract the virus, there is higher risk that patient symptoms will be more severe. In the worst cases, COVID-19 infections can result in death to the patient.

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PUBLIC HEALTH

SPECIES COMPOSITION OF NASOPHARYNGEAL MICROFLORA OF CHILDREN WITH ACUTE SINUSITIS

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Introduction. Acute sinusitis is a significant proportion of otolaryngological (ENT) children diseases of all ages. A significant proportion of sinusitis (40%) are bacterial and requires antibiotic therapy. The choice of antibiotic may be influenced by the presence of pathogenic microflora of adjacent organs and its sensitivity.

Aim. To determine the species composition and sensitivity to antibiotics of the nasopharyngeal microflora of children with acute sinusitis.

Materials and methods. Altogether 208 children with acute sinusitis from the ENT department of Sumy Regional Children's Hospital at period 2020-2021 were enrolled in the study. X-ray examination was used for the definitive diagnosis. The clinical material (swabs from the nasopharynx) of sick children was amenable to microbiological research. The antibiotic sensitivity of the isolated microorganisms to the 6 most common antibiotics in ENT practice was established using the disco-diffusion method. Antibiotic sensitivity was studied using the disco-diffusion method. Clinical and statistical research methods were also used in the work.

Results. Of the total number of children with acute sinusitis in 40 children, no pathogenic microflora was found in nasopharyngeal swabs. Pathogenic microflora was detected in 168 other patients (80.8%): *S. aureus* in 86 children (41.3%), *S. haemolyticus* - 80 (38.5%), *E. coli* - 2 (1.0%). The susceptibility of bacteria of the genus *Staphylococcus* decreased in the following sequence: benzylpenicillin (20.1%) → oxacillin (30.2%) → vancomycin (44.6%) → gentamicin and lincomycin (78.1%) → tobramycin (95.4%).

Conclusions. Pathogenic microflora was detected in nasopharyngeal swabs in 80.8% of children with acute sinusitis. The dominant representative of the pathogenic microflora are bacteria of the genus Staphylococcus. A significant proportion of these bacteria was resistant to a number of antibiotics: benzylpenicillin (20.1%), oxacillin (30.2%), vancomycin (44.6%). In the treatment of patients with acute sinusitis, it is necessary to take into account the degree of contamination of the nasopharynx with pathogenic microflora and the degree of its sensitivity to appropriate antibiotics.

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ANTIBIOTIC RESISTANCE OF MICROORGANISMS ASSOCIATED WITH WOUND SURFACES

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Introduction. Monitoring of antibiotic resistance of isolates from wounds allows to assess the future prospects for antibiotic therapy and the current situation in the hospitals. At the same time, the search for promising antibiotics and antimicrobial substances for new treatment strategies and overcoming antibiotic resistance of microorganisms is continued.

Aim. The aim of the study was to detect bacteria associated with wound surfaces of patients from Kyiv Regional Clinical Hospital (Kyiv) for the period of April 2019 - April 2020, and check their resistance to the most commonly used antibiotics.

Materials and methods. Isolation, identification and antibiotic resistance estimation were performed according to generally accepted methods and in accordance with international recommendations of EUCAST.

Results. In total, 1540 isolates were analyzed. The most part of isolates from wound surfaces were presented by *Staphylococcus epidermidis* and *S. aureus*. Among the gram-negative microflora Enterobacteriaceae was dominated and presented by *Klebsiella pneumoniae*, *Escherichia coli* and others. The isolates were mostly resistant to fosfomycins, penicillins, β-lactam inhibitors and monobactams. At the same time, they were highly sensitie to the last line antibiotics - teicoplanin, vancomycin and linezolid.

Conclusions. The obtained data are important according to the assessment of antibiotic resistance development in hospitals in Ukraine and the prospects of developing new strategies for the treatment of antibiotic-resistant infections.

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TINNITUS AND ANXIETY DURING THE PANDEMIC- AN EMERGING PUBLIC HEALTH ISSSUE

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Introduction. Tinnitus is a symptom that affects about 10 to 15% of people worldwide. According to previous research, different anxiety disorders, which have been on the rise since the Covid-19 pandemic, are likely to cause primary tinnitus.

Aim. The aim of this study was to see if higher levels of anxiety were associated with higher tinnitus intensity, as well as how tinnitus affects the daily lives and medical interactions of those who suffer from it.

Materials and methods. To achieve the aim of the study we designed a three-part anonymous online questionnaire using validated Hospital Anxiety and Depression (HAD) scale to measure anxiety levels of respondents. Only respondents with likely clinically relevant anxiety levels were assessed further. The data was analyzed using Microsoft Excel and R Commander software, $p<0.05$ was considered statistically significant.

Results. 80 out of 153 respondents had likely clinically relevant anxiety levels. Mean age of respondents was 35,2±11,3 years, 41% of the respondents were men and 59% women.

43% of respondents reported their first experience of tinnitus being during the Covid-19 pandemic. More than half (54%) of the respondents answered that they experience tinnitus in their head. Stress, according to 68% of respondents, was associated with exacerbation of tinnitus. Annoyance caused by tinnitus was statistically significantly ($p = 0.041$) more common in anxious people. Fear that tinnitus would always remain ($p = 0.0023$), deterioration in emotional state ($p = 0.039$), and decrease in sleep quality ($p = 0.014$) were all statistically significantly related with the need of physician's consultation in respondents with a clinical suspicion of anxiety.

Only 33% of respondents with clinically likely relevant anxiety levels made a doctor appointment for their tinnitus and only one respondent reported that they received an explanation for tinnitus and was referred to specialist. All respondents who went to a physician reported, that they would have liked a referral to the psychiatrist or a psychologist.

Conclusions. Stress is a significant factor affecting tinnitus severity among anxious individuals. Seeing a physician for tinnitus is statistically significantly associated with a worsening of emotional state, a deterioration in sleep quality, and a fear that tinnitus will always remain. Our study uncovered an evident shortage of psychological support for people who suffer from tinnitus.

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SOCIO-ECONOMIC CONDITIONS, LIFESTYLE, OCCUPATIONAL BEHAVIOUR OF THE SANITATION WORKER IN THE SELECTED AREA OF OLD DHAKA CITY , BANGLADESH

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I**ntroduction**. Sanitation workers play an important role in maintaining the health- hygiene in the communities.

Aim. The aim of this study is to find out socio-economic condition, lifestyle, common health problems, occupational behavior of the sanitary workers.

Material and methods. This were a cross sectional type of descriptive study .149 respondents were selected and data was collected from them by Face to face interview. The sampling technique was Convenient type of non -probability sampling. Structural questionnaire was used as research instrument. Graphical presentation (pie chart), tables were applied and analyzed by SPSS 20 programme.

Results. Among the total respondents 145(97.3%) were sweeper and 4 were scavenges.67 (45%) were literate .124 lived in Semi Paccya house . 15(10.07%) had sore throat,21(14.09%) had cough,9(6%) had breathlessness and 16(10.74%) had chest tightness.7 (20%) had lacrimation ,15(42.9%) had redness of eye,13(37.1%) had itching problem in eye. 7 (4.10%) had abdominal pain and 2(1.03%) had diarrhea. 92(61.74%) had musculoskeletal pain. 43(46.7%) had leg pain,37(40.2%) had back pain. 31(20.81%) had knowledge about personal protection equipment, 12(37.50%) used mask,8(25%) used hand gloves. 7(4.70%) had a regular health checkup. 51(46.36%) had a habit of taking betel nut ,31(28.18%) took cigarette, 27(24.55%) took gul and 1(0.91%) took tobacco.

Conclusions. The occupational health hazards, the knowledge and attitude about the health conditions and occupation ,socio-economic condition, lifestyle of the sanitation workers are not satisfactory.

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OUTCOMES OF HOME ISOLATED COVID-19 PATIENTS AND RISK FACTORS ASSOCIATED WITH THE ADVERSE OUTCOMES: LONGITUDINAL RETROSPECTIVE STUDY IN SHIMOGA, KARNATAKA

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Introduction. COVID-19 is a current global pandemic caused by the newly discovered novel SARS-COV-2. According to studies in comparison to those who have recovered, patients who have died thus far were older, more likely to be male, and to have a comorbidity such as hypertension, diabetes, cardiovascular disease, or lung disease thus necessitating the assessment of risk variables in various demographic groups or contexts. The study aims to assess the association between COVID-19 comorbidities and outcomes such as hospitalization, recovery, and mortality. Data of confirmed COVID cases with definitive outcomes were retrieved retrospectively from Mcgann hospital's triage.

Aim. To estimate the proportion of different outcomes such as recovery, hospitalization, and mortality among home isolated covid-19 patients**.** To estimate the proportion and to determine various risk factors associated with COVID-19 adverse outcome.

Material and methods. The study was carried out in Shimoga Institute of Medical Sciences, Shivamogga, Karnataka. Study design*:* Longitudinal Retrospective study. Study period: April 20th-June 20th, 2021. Study population: Home isolated COVID-19 patients. Sample size: 168. Data was collected by telephonic Interview.

Results. A total of 168 people participated in this study, with 93 men (55.3%) and 75 women (44.7%). More than 90% of patients in the Home Isolated Covid 19 ptients recovered, 10.75 percent required hospitalisation, and 5% died. One third of the patients (37%) had one or more comorbidities.

Conclusions. Our systematic overview of the results to determine the relationship between COVID-19 infection, and outcomes such as hospitalisation, death, and recovery shows that older age, male gender and comorbidities have higher hospitalisation rates. Comorbidities and older age were associated with a higher risk of death in hospitalised patients. Even though recovery rate is very high, a significant (10.75%) home isolated patients need hospital admission in the disease course. So, the proper monitoring of home isolated patients can save the lives of many COVID 19 patients.

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THE METABOLIC RATIONALE FOR THE NEED OF NUTRITIONAL SUPPORT OF PHYSICAL AND MENTAL HEALTH UNDER STRESS

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Introduction. In the context of the Covid-19 pandemic, the stress load on the human body increases, the level of anxiety and fear rises, and the risks of developing depression grow. Active young people who find themselves in socially constrained conditions are most affected. The existing recommendations of health care institutions in modern conditions aim to maintain the metabolic health of people. In this regard, it is relevant to study certain nutrients' effects on cellular processes triggered by exposure to stressful environmental factors.

Aim. This work aimed to analyze current scientific data on the positive effect of specific nutrients on human metabolism under exposure to stressful environmental factors.

Materials and methods. The scientific data analysis was performed by using the databases DOAJ, EBSCO, Scopus, ScienceDirect, PubMed.

Results. Emotional stress leads to metabolic disturbances. These changes are manifested in the violation of habitual dietary patterns. In this case a person's eating behavior resembles the eating pattern during the depression: poor appetite, skipping meals, craving for sugary foods, and more. Many nutrients have a positive effect on metabolic processes in the cells of the nervous system and the body as a whole. Some studies report that foods rich in the amino acids tryptophan, methionine, tyrosine, and phenylalanine normalize the balance of neurotransmitters, stabilize the emotional background, and improve sleep quality. Several micronutrients, such as polyunsaturated fatty acids and vitamin B12, magnesium, have an antidepressant effect. It was found that the intake of magnesium preparations (in the form of glycinate and taurinate) contributed to the rapid and positive dynamics of the recovery process in depressive conditions.

Conclusions. The analysis of the open literature sources showed that increasing the amount of omega-3 fatty acids, vitamin B12, minerals, and amino acids in the diet can reduce the risk of diseases associated with physical and mental health changes under stress conditions.

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THE ASSOCIATION OF ANXIETY AND DEPRESSION WITH PATIENT SATISFACTION IN PRIMARY HEALTH CARE CENTERS: A CROSS-*SECTIONAL STUDY*

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Introduction. A recent interest has grown in improving the quality of Healthcare through patient satisfaction. The link between patient satisfaction and a broad spectrum of factors have been studied. Yet the association with mental illnesses is scares. 24% of patients attending primary healthcare suffer from unrecognized mental disorder. An anxious patient is less likely to stay focused, while depressed patient hold negative view of life in general.

Aim. To determine the association of anxiety and depressive symptoms in addition to socio-demographic characteristics with patient satisfaction in primary healthcare centers.

Materials and methods. A sample of 304 patients or co-patients aged at least 18 years, attending primary health center were asked to fill out an anonymous questionnaire containing socio-demographic, list of chronic illnesses, a self- reported assessment of anxiety and depression (HAD scale) and patient satisfaction questionnaire (PSQ-18).

Results. 18.4 % evaluated PHC services poorly, this was more characteristic of those of university education ($p<0.05$).The most positive evaluations were in Interpersonal Manner and Communication skills (mean of 3.63 and 3.41 respectively).The most negative evaluations were in Time Spent with the Doctor and Accessibility and Convenience (mean 2.93 and 3.01 respectively).. The prevalence of anxiety and depression were 42.4 % and 45.4%, respectively. Severe anxiety was significantly associated with living far from the health center ($p=0.02$). Severe depression was significantly associated with young age, female gender and university education($p<0.05$). Regression analysis showed that better satisfaction was observed in less depressed, less anxious, those with lower income, and of secondary education.

Conclusion. Being more anxious, depressed, having higher income and higher education are related to worse satisfaction with primary healthcare services. The satisfaction with the time of consultation, accessibility and convenience of the service were poor.The high prevalence of anxiety and depression among PHC attendants is a major concern.

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PHYSICAL REHABILITATION AND SPORTS MEDICINE

PHYSICAL REHABILITATION FOR SKELETAL MUSCLE ATROPHY

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Introduction. Muscles are an important structure of our body. They are innervated by motor and sensory fibers. During work in the muscles there is an intensive metabolism, the intensity of which is regulated by the autonomic nervous system. Atrophy can occur when metabolic processes of different genesis are disturbed. Atrophy or excessive loss of muscle mass is associated with a number of diseases, including myopathies and muscular dystrophies, as well as systemic disorders such as cancer, diabetes, sepsis, heart failure and physiological aging. May lead to disability or complete loss of the limb. Therefore, it is important to timely rehabilitation and compliance with the correct motor regime.

Materials and methods. To consider physical therapy for skeletal muscle atrophy. Analysis of scientific and methodological literature.

Results. Atrophy - a decrease in the cross-sectional area of the fiber with subsequent loss of strength (Vandervoort A., 2002). Robert W. Jackman, Susan C. Kandarian note that skeletal muscle atrophy is accompanied by a decrease in muscle protein content, a decrease in fiber diameter, and a decrease in strength and resistance to fatigue. The causes are related to muscle and / or nerve tissue damage.

After finding out the cause of atrophy, it is treated with medication and physical therapy. In the scientific literature, the most common means of physical therapy are kinesiotherapy in combination with diet and hardware physiotherapy. Muneshige S. and Kunihiro S., 2020 concluded that to improve muscle anabolism, the diet must includes alkaline foods, protein foods, vitamins A, D, B6, B12 and meals must be divided into 4-6 portions. The use of kinesiotherapy in the treatment of various forms of atrophy of the muscular system is based on the improvement of the functional state of the muscles under the influence of dosed training and the consequent increase in muscle mass (Yamshchikova N). Engelke S, Koch F, Sciascia Q, (2016) indicate that strength exercises increase the transport of amino acids from blood plasma to muscle cells through the transmembrane transporter, also promote muscle protein synthesis, increase energy metabolism. Manual techniques improve muscle tone, reduce symptoms, improve blood flow to the extremities and stimulate cellular respiration.

The use of electrical procedures and procedures with magnetic fields have proven to stimulate nerve centers and improve tissue elasticity.

Conclusions. The considered means of physical therapy help the patient to quickly restore the normal functioning of muscle tissue and prevent the development of further complications. We recommend a comprehensive approach to the treatment and prevention of muscle atrophy, using diet therapy, kinesiotherapy and physiotherapy.

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SWALLOWING DISORDERS ARE ONE OF THE PROBLEMS OF REHABILITATION MEDICINE

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Introduction. Unfortunately, cerebral stroke remains one of the most pressing problems of modern medicine, remaining one of the leading causes of death rate in the world's population. Our earlier studies have demonstrated that the prognosis for a disease in most cases is due to the development of complications. One of these conditions is impaired swallowing or dysphagia, which leads to the course of aspiration pneumonia. Therapy of such conditions requires not only active medicated correction. Dysphagia is an indication for full-fledged rehabilitation therapy with the participation of a speech therapist from a stroke team.

Aim. The aim of our research was to study the prevalence of this phenomenon among patients with cerebrovascular accidents and the possibilities of active intervention of specialists.

Materials and methods. During the observation period, 42 patients with acute ischemic stroke were examined. Individuals with impaired consciousness were not included in the study. Anamnestic, clinical method was used, including swallowing test. The nursing staff assisted in the observation process.

Results. Some degree of dysphagia was found in 45% of patients, four of whom required tube feeding. Among them, 13 people had a stroke in the vertebrobasilar blood supply and 6 in the internal carotid artery system. In consequence of the changes that have taken place in the health care system of Ukraine, active screening in specialized departments, qualified speech therapy assistance is available to patients. As a result of the measures taken, it was possible to avoid the development of late complications in the form of aspiration pneumonia in all observed patients. 26 people have fully recovered their swallowing function. From medications were used medicaments that improve neuromuscular transmission and cerebral circulation. Persons requiring tube feeding were discharged at the end of the course of treatment without the need for its use.

Conclusions. Based on the data obtained, the most effective way to prevent aspiration pneumonia can be considered: 1) active rehabilitation measures carried out by the intensive care unit from the first days of hospitalization; 2) increasing the participation of nurses in the diagnosis of the problem; 3) training of junior medical personnel in the technique and rules of feeding such patients; 4) plausible medicamentous therapy.

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PREVENTION OF SPORTS INJURIES AND REHABILITATION MEASURES IN THE TRAINING OF HIGHLY QUALIFIED ATHLETES

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Introduction. Today, athletics is the most popular sport. This sport is not considered dangerous, but it does not preclude professional sports injuries, both among beginners and professionals. Studies show that the main cause of injuries in athletics is overexertion of the musculoskeletal system. In all athletics, ankle and knee injuries are the most common, especially sprains and tears of the ligaments; tendons and tears of tendons, less often the muscles of the back of the thigh. This indicates that this problem requires well-established rehabilitation programs that will be created on the basic principles of the recovery process of the musculoskeletal system and will help athletes to return to active training as soon as possible.

Aim. Prevention of injuries and increase the effectiveness of rehabilitation measures for injuries of joints, ligaments and tendons of the lower extremities in the training of highly qualified athletes.

Materials and methods. To solve the tasks we have chosen the following methods: theoretical analysis and generalization of scientific and methodological literature; pedagogical observations; questionnaire of coaches and athletes; method of expert assessments; methods of mathematical statistics.

Results. The main aspects that are characteristic of injuries in athletics are injuries of mild and moderate severity. In the presence of these injuries, quite often the training process does not stop completely, but only becomes restrictive, which increases the risk of injury. In most cases, athletes are not provided with proper treatment and, accordingly, a set of rehabilitation measures is not carried out to eliminate residual effects after injuries of the musculoskeletal system. This in turn carries the risk of re-injury.

Conclusions. Based on the study of scientific and methodological literature, questionnaires of athletes and coaches, pedagogical observations, it can be argued that musculoskeletal overstrain is the most common cause of injury among athletes. High rates of temporary disability among athletes with musculoskeletal disorders indicate the need for further improvement of training methods for athletes, as well as the creation of unique rehabilitation and prevention programs for injuries of the musculoskeletal system in athletes.

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«BIOMEDICAL PERSPECTIVES III»

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