Анотації наукових робіт

UDC: 614.2:331.108.2:330.131.7

PERSONNEL RISKS OF POOR QUALITY OF HEALTH CARE

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The aim of the research: to determine personnel risks of poor health care in health care institutes due to the survey of health care professionals.

Materials and methods: The survey of 257 health care professionals (managers, doctors and nurses) of health care establishments of Kiev and Kherson region has been done. The survey involved the questionnaire developed by the Department of Health Care Management of Bogomolets National Medical University.

Results:

Conclusions:

1. The professional incompetence, lack of material interest, and negative personality traits of the staff are leading personnel risk in health care establishments.
2. The quality of health care depends on competence of health care professionals, material interest, and personality traits of the medical staff.
3. The assessment of personnel risks depends on the evaluator's position (manager or a subordinate). Leading personnel risks for executives are professional incompetence and lack of material interest, for doctors and nurses - lack of material interest, negative personality traits of the staff.

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UDC616.379-008.64:616.61:615.25

RESULTS OF MONITORING NEPHROGENIC COMPLICATIONS DYNAMICS ON THE BACKGROUND OF DIABETES MELLITUS TYPE I

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The aim of the research: was to determine the structure of renal involvement and diabetic nephropathy in patients with type1 diabetes mellitus (T1DM) and peculiarities of pharmacotherapy in Khmelnytsky region in 2013.

Materials and methods: medical histories and prescriptions for 166 patients with T1DM were analyzed. The patients were treated at the Endocrinology department of the Khmelnytsky regional hospital in 2013. The statistic analysis was carried out by the software STATISTICA.

Results: The monitoring of nephrogenic complications dynamics in patients with type1 diabetes mellitus was conducted. Diabetic nephropathy was diagnosed in 39,76% of patients (42 women and 22 men). Age of patients ranged from 18 to 59. There were 36 young patients (18-29), 23 patients of average age (30-44), 7 – of mature age (45-59). Duration of diabetic nephropathy was 10 years in 23 patients (34,85%), 10-20 years – in 32 patients (48,48%), more than 20 years – in 11 patients (16,67%). The microalbuminuric stage of diabetic nephropathy was found in 7 patients of the young group (10,60%), in 3 patients (4,55%) of the average group and in 3 patients (4,55%) of the mature group. The daily microalbuminuria was determined in 93.39 % of patients. It can be considered a positive aspect of the diagnostics. The proteinuric stage of diabetic nephropathy was found in 16 patients (24,24%) of the young group, in 29 patients (43,94%) of the average group and in 8 patients (12,12%) of the mature group. The daily microalbuminuria was identified in 96,39 % of patients. Monitoring corresponds to diagnostic standards. Glycohemoglobin was studied in blood, glycohemoglobin ranges from 7,64% to 14,2%. Thus, analysis of structure for chronic kidney insufficiency cases in patients with T1DM revealed that it was predominantly determined in patients suffering from it more than 10 years, making 73,3 % of this complication. Laboratory and biochemical methods were used to prove the diagnosis of chronic renal insufficiency in 86,7% of patients. Lisinopril was used as nephroprotector due to the Unified clinical protocol of health care for patients with T1DM.

Conclusion:

1. Diabetes mellitus type 1 is accompanied by diabetic nephropathy with prolongation of the illness duration, especially following 10-year anamnesis (almost in each 4th patient with diabetic nephropathy).
2. The monitoring of glycosylated hemoglobin level in blood is insufficient in frequency for dynamics throughout a year, especially with its increase.

3. The risks of diabetic nephropathy require greater attention to prompt diagnostics.

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UDC 615.322:004].035.8

DEVELOPMENT OF «EVIDENCE-BASED EFFICIENCY OF HERBAL MEDICINES» DATABASE AS THE BASIS FOR RATIONAL PHYTOTHERAPY

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The aim of the research: was to develop an electronic evidence-based database «Clinical efficiency of herbal medicines» in order to facilitate health care providers obtaining reliable information on the expediency and effectiveness of herbal medicines usage.

Materials and methods: Objects of research: herbal medicines registered in Ukraine; evidence-base data on the effectiveness of herbal medicines; worldwide highly probative evidence-based databases (n=6) (*Cochrane Library*, *MedLine/PubMed*, *MedLine Plus*, *NCCAM*, *National Institute for Health Clinical Excellence* (*NICE)*, *Scottish Intercollegiate Guideline Network (SIGN)*, *HerbMed*). Methods applied: bibliographic; online information search; standardization; analytical and comparative modeling.

Results: We conducted the search, analysis and systematization of evidence-based data (n=918) on the effectiveness of 25 herbal medicines registered in Ukraine. In our opinion, the developed database is convenient for usage and can be recorded by any removable drivers (*CD, DVD, HDD*); besides, it does not require special user's skills. Due to increasing number of clinical studies on the effectiveness of herbal medicines and rapid renewing of evidence-based information, the developed database has the possibility of increasing or changing its content if necessary.

Conclusions:

1. We believe that the developed database «Clinical efficiency of herbal medicines» can be successfully implemented into practice and can be easily supplemented with the new data. The promptness of access to the required classified information on clinical efficacy of herbal medicines, and the possibility of reviewing primary sources makes the database effective. The user has a chance of a quick access to standardized information on the effectiveness of herbal medicines in different certain clinical indications applying different search options.
2. Our database can be used at the stages of pre- and postgraduate training of healthcare providers, in practical activity of pharmacists, clinical pharmacists and physicians for an independent search of evidence-based information. We believe that it may increase their awareness of rational use of herbal medicines according to EBM principles.
3. In our opinion, the basis for the effective evidence-based usage of herbal medicines involves: identification and standardization of main biologically active compounds of herbal medicines; conducting multicenter clinical trials on detecting their clinical efficacy; establishing optimal therapeutic dose range; identification of possible adverse reactions and drug-drug interactions. The abovementioned factors may serve the basis for production and standardization of efficient herbal medicines, and, therefore, for phytotherapy rationalization and its integration into evidence-based clinical practice.

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UDC 615.2/.3:615.15:614.23

PROFESSIONAL ASSESSMENT OF PHARMACOTHERAPY PLAN BY A CLINICAL PHARMACIST: RETROSPECTIVE ANALYSIS OF A CLINICAL CASE

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The aim of the research: to assess pharmacotherapy plan and pharmaceutical care elaboration intended for a physician on the example of a real clinical case of detecting drug-related problems.

Materials and methods: Information resources for analysis: a patient's prescription form; adapted pharmacotherapy assessment methodology for detecting DRP; instructions for using the analyzed drugs; State Drug Formulary (5th edition); valid clinical guidelines approved by the Ministry of Health Care of Ukraine; drug interaction checker. The study design: retrospective analysis of a clinical case. No conflict of interests was declared in process of the research. The methods used: systemic analysis; analytical, comparative; clinical and pharmaceutical; clinical and pharmacological.

Results. The study revealed 45 drug-related problems. They correspond to the main 7 rubrics of the adapted DRP classification. It was determined that the prevailing 51,1%of DRPs were potential drug-drug interactions, 20,0% – native problems of drug prescribing practice and 8,8% – drug choice and drug administration problems. The study identified 3 cases of drug duplication (belonging to the same pharmacotherapeutic group). More than ½ of all identified DRPs were drug-drug interactions (n=23), including 2 (8,7%) serious and 21 (91,3%) clinically significant interactions requiring careful monitoring. Elements of pharmaceutical care intended for a physician concerning detected incorrect prescribing in the analyzed clinical case were processed.

Conclusions:

1. The study identified 45 drug-related problems, related to the main 7 rubrics of adapted drug-related problems classification. It was determined that prevailing 51,1% of drug-related problems were potential drug-drug interactions, 20,0% – native problems of drugs prescription practice and 8,8% – drug choice and drug administration problems. Moreover, 3 cases of drug duplication (belonging to the same pharmacotherapeutic group) were found: mildronate and phosphocreatine, furosemide and ethacrynic acid; bemiparin and rivaroxaban.
2. More than ½ of all identified drug-related problems were drug-drug interactions (n=23), including 2 (8,7%) serious life-threatening potential reactions and 21 (91,3%) clinically significant drug interactions requiring careful monitoring.
3. The retrospective design of the study does not imply correcting identified drug-related problems or expert's interventions (in particular, clinical pharmacist's) and does not affect the result. However, the results of the analysis may promote avoiding similar mistakes and/or pharmacotherapy nonconformities in future. The study outcomes may serve educational material and certify the clinical pharmacists' activities in search of systemic and individual medication errors intended to improve pharmacotherapy quality.

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UDC 582.998:57.086.83+581.143.6:633.8:615.3

OBTAINING EXTRACTS FROM *ARNICA MONTANA L.*CALLUS MASS AND PLANT MATERIAL

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The aim of the research: Adding *Arnica montana L.* to *in vitro* culture, obtaining extracts from callus mass and plant material; comparative analysis of biologically active substances (BAS) in these extracts, primary screening of their fungicidal activities.

Materials and methods: Research material included plant material: inflorescences and seeds of *Arnica montana L.* Callus mass was obtained by using agar nutrient media *Murasyhe-Skoog* supplemented with the following growth regulators: IAA, NAA, 2,4-D and kinetin. Plant material and dry callus mass were extracted by exhaustive extraction in the *Soxhlet* apparatus. 40% and 96% ethanol was used as an extractant. Physical and chemical methods of analysis were used to determine the qualitative and quantitative content of BAS in the

obtained extracts. Antifungal activities of extracts were identified on standard clinical strains of microorganisms by diffusion into agar («wells»method) with Saburo medium.

Results: *Arnica montana L.* callus mass was obtained by cultivation *in vitro.* The callus formation rate depended on mineral and phytohormonal composition of the nutrient medium and explant types. Most of callus mass was obtained by leaf explants on the medium, with adding of 2,4-dichlorophenoxyacetic acid (0,4 mg/l), naphthalene acetic acid (0,1 mg/l) and indole-3-acetic acid(2,0 mg/l), kinetin (0,5 mg/l). Extracts received from plant material and callus mass were studied on qualitative and quantitative contents of biologically active substances and their fungicidal activities.

Conclusion: *Arnica montana L.* was added into *in vitro* culture. It was determined that the highest increase of biomass was 35 g of dry matter per 1 liter of the nutrient medium on the 50th day. Extracts from callus mass and plant material were received. It was found that the content of flavonoids, tannins, polysaccharides in the *Arnica montana L.* callus mass extract is higher than in the extract of plant material. Extracts from *Arnica montana L.* callus mass proved to be more effective antifungal preparations than extracts from *Arnica Montana L.* plant material.

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UDK: 616.233-002.2:575.113.2:612.017

INFLUENCE OF CARDONAT ON ENDOGENOUS INTOXICATION DYNAMICS IN PATIENTS WITH BRONCHIAL ASTHMA DUE TO GENETIC POLYMORPHISM

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The aim of the research: To study the efficacy and safety of the main treatment for asthma by assessment of endogenous intoxication. To estimate dynamics of endogenous intoxication of asthma following basic treatment combined with cardonat according to the different activity of NAT2 enzyme.

Material and methods: a complex of diagnostic approaches involved healthy and ill individuals. The control group consisted of 100 healthy volunteers and 242 patients with medium severity asthma. To analyze the dynamics of clinical and biochemical parameters due to NAT2 activity, patients were divided into groups randomly: comparison group undergoing basic therapy for asthma and group of patients undergoing basic therapy combined with cardonat. Examination of patients involved clinical examination, AST-test control, evaluation of respiratory function, determination of medium molecular mass peptides level in blood and leukocyte index of intoxication, the activity N-acetyltransferase 2 before treatment, after therapy and in two months following pharmacotherapy.

Results: Slow acetylators dominated in comparison with fast ones (65,2%:34,8%) in patients with asthma, in contrast to healthy individuals, where fast acetylators dominated (63%) in comparison with slow ones (37%). Level of medium molecular mass peptidesin the blood of patients with asthma was 0,301±0,006 cu in contrast to the average level of this parameter in control group 0,187±0,03 cu ($P<0,001$). The inverse correlation between the activity of NAT 2 and the level of medium molecular mass peptides($r=-0,5$, $p<0,05$) was identified. Thus, patients with the most severe endotoxicosis (0,500-0,600 cu) were in 100% of cases in slow acetylators. Dynamics of medium molecular mass peptides during one and two months of drug therapy in patients undergoing basic treatment for asthma with cardonat was positive: decrease to 33,9% in 2 months in slow and to 29.2% in fast acetylators.

Conclusions:

1. Slow acetylators predominated (65,2%) in comparison with rapid ones (34,8%) in patients with asth-ma; in healthy individuals the opposite ratio was observed. Endogenous intoxication was more appa-rent in slow acetylators than in fast acetylators, the level of medium molecular mass peptides and leukocyte index of intoxication increased on the background of the basic treatment.
2. Activity of acetylation significantly increased following 2 months of the basic treatment of asthma in combination with cardonat. Thus, in slow acetylators the growth of sulfadimezin acetylated metabo-lite in urine reached +18,7% ($p<0,001$). Cardonat contributed to the reduction of endogenous intoxica-tion.

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UDC: 616.895.4+ 618.7 + 159.972 + 159.9.072.43

POSTPARTUM DEPRESSION IN WOMEN WITH DEPRESSION AND ANXIETY DURING PREGNANCY

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The aim of the research: to determine the rates of postpartum depressive disorders in women with depression and anxiety (reactive, personal) during pregnancy; to estimate emotional state of women during pregnancy, childbirth and in the postpartum period.

Materials and methods: Anamnestic method of data collection with performing psychiatric interviews; method of psychodynamic diagnostics using questioning and the scales such as the reactive and personal anxiety *C.D. Spielberger–Hanin* scale, the *Hamilton* anxiety scale, the Beck depression scale and the Edinburgh postpartum depression scale; Statistical methods for processing of the results.

Results: Screening of 90 pregnant women in the first, second and third trimesters revealed that 34 women (38%) had non-psychotic depressive and anxiety disorders (1st group), 23 women (25.5%) had anxiety disorders (2nd group), and no psychopathology was found in 33 of them (36.6%) during clinical and psychopathogical examinations (a control group). All 90 pregnant women were examined due to the *C.D. Spielberger–Hanin* personal and reactive anxiety scale. High levels of the personal anxiety were observed in 32.2% of the pregnant women. High levels of the reactive anxiety were noticed in 20% of the women. The symptoms of the anxiety during the pregnancy included permanent worries, feelings that something bad is going to happen, racing thoughts, disturbances of sleep and appetite, inability to sit still, and physical symptoms. According to the *Beck* depression scale, prenatal depression was observed in 34 women (37.7%). We have determined that 24 women (26.6%) had a mild depression, 8 women (8.8%) had a moderate depression. High-level depressions were observed in 2 women (2.2%) who had suicidal thoughts. The depression symptoms during the pregnancy included persistent sadness, difficulties in concentrating on something, loss of interest in the activities they enjoy usually, and recurring thoughts of hopelessness. Examining 90 women after delivery due to the Edinburg postpartum depression scale, we have found that 25 women (27.7%) possessed a postpartum depression. In the 1st group with the depression and the anxiety during pregnancy, we found 17 women with the postpartum depression, including 3 women with suicidal thoughts. In the 2nd group with the anxiety disorders there were 5 women with postpartum depression. Only 3 women with the postpartum depression were found in the control group. The symptoms of the postpartum depression were mainly the same as those associated with the major depression occurring in the postpartum period, including a depressed mood, anhedonia and low life energy, accompanied with suicidal ideation.

Conclusions: Women with high levels of anxiety and depression during pregnancy have high risk of postpartum depression. In our opinion, a classic, routine search for risk factors of postpartum depression is inexpedient. We believe that levels of anxiety and depression during pregnancy are significant predictorial factors of postpartum depression. The results of our study also suggest that we still need specialized mental-health programs for the pregnant women and the mothers with infants in general practice, obstetrics, gynecology, and pediatrics.

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UDC 615.036.8

ANALYSIS OF DRUG AFFORDABILITY FOR TREATMENT OF BENIGN PROSTATIC HYPERPLASIA

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The aim of the research: to study the drug assortment for benign prostatic hyperplasia (BPH) treatment on the pharmaceutical market of Ukraine in the first half of 2014; to determine affordability of drugs available on the market; to determine affordability of new suppositories «Phytoprost» and «Tamsuloprost» developed at the National University of Pharmacy.

Materials and methods: According to the information from Morion research and information system «Drugs», the international non-proprietary names (INN) and brand names (BN) of the drugs available on the Ukrainian pharmaceutical market were determined, as well as the producers names, the number of imported and domestic drugs, dosage forms, price ranges; the affordability ratios were calculated (affordability ratio and solvency ratio) for the drugs available on the market and for new suppositories «Tamsuloprost» and «Phytoprost» developed at the NPhU.

Results: In the first half of 2014, there were enough drugs for BPH treatment on Ukrainian market: 60 BN, 9 INN, with dominating imported drugs (40 BN) in the form of capsules and tablets. Many drugs have reasonably narrow price range, limiting a consumer's choice of drugs for treatment. A monthly treatment with studied preparations will cost a patient between 2% and 17,6% of the average salary. New suppositories «Phytoprost» and «Tamsuloprost» have average solvency ratios 5,3% and 3,6% respectively, which confirms the expediency of their usage.

Conclusions: Medications for BPH treatment on the pharmaceutical market of Ukraine in the first half of 2014 were available in the sufficient range, INN were presented by numerous generic drugs. However, not all of them have a wide price range, which limits a patient's choice. The affordability and solvency ratios revealed that most drugs were not affordable for patients. «Tamsuloprost» and «Phytoprost» developed at NPhU have the average solvency ratios in comparison with the drugs available on the pharmaceutical market, which proves the affordability of the new drugs for Ukrainian consumers.

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УДК 615.256.4:547.816.3]:340.627

CHOICE OF REAGENT-PRECIPITANT FOR ISOLATION OF SILDENAFIL FROM BLOOD BY SOLID-PHASE EXTRACTION

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The aim of the research: To study the influence of deproteinizator nature on sildenafil determination in the blood after purification by solid-phase extraction.

Materials and methods: Model mixtures containing 1 ml of blood with different sildenafil content (0,1 to 0,5 mg) were used. Acetonitrile, 96% ethanol, aqueous solutions of zinc sulfate 10% and 20% sulfosalicylic acid, saturated solutions of oxalic acid, phosphotungstic acid, and ammonium sulfate crystal were applied for deproteinization. Purification of the blood samples after precipitation of protein components was performed by solid-phase extraction method on cartridges such as Oasis HLB (30 mg Waters, USA). The optimal eluentis 96% ethanol. Quantitative determination of sildenafil was performed by GC-MS method in the capillary column HP-1 (methylsiloxane).

Results: Up to 10-20% of sildenafil was isolated from the blood using deproteinizator of 20% solution of sulfosalicylic acid or acetonitrile saturated solution of phosphotungstic acid. Up to 41% of sildenafil was received by adding a saturated solution of oxalic acid with ammonium sulfate crystal. The best reagents for precipitation of proteins in isolating sildenafil from the blood are 10% solution of zinc sulfate and 96% ethanol. Up to 60% of the preparation from the blood can be isolated by these deproteinizators. The relative error in detecting sildenafil in blood by GC-MS method is 5 ng/mL, and the limit of quantificationis 7 ng/ml. Quantifed relative error is ±1,11% on the day of experiment, and ±1,17% in 24 hours.

Conclusions:

1. The conditions of quantification determination of sildenafil in blood by GC-MS method were developed.
2. The influence of deproteinizators nature on the isolation sildenafil from blood by solid-phase extraction was studied.
3. The optimal reagent for deproteinization in isolation sildenafil from the blood by solid-phase extraction is a 10% solution of ZnSO4, which is isolated to 60,2% from the preparation.

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UDC 615.012.1:547.789/.793

BICYCLIC 4-THIAZOLIDINONES AS «STRUCTURAL MATRIX» IN THE DESIGN OF POTENTIAL BIOLOGICALLY ACTIVE COMPOUNDS

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The aim of the research: In an earlier communications, it was shown that bicyclic 4-thiazolidinones and some of their derivatives possess a wide range of biological activity. The purpose of the investigation was to determine whether modification of these heterocyclic systems would provide a clue to the origin of pharmacological activity and possibly provide compounds with enhanced potency.

Materials and methods: Synthesis of target bicyclic 4-thiazolidinone molecules via Knoevenagel condensation, [2+3]-cyclocondensation, acylation reaction etc.

Results: The bicyclic target compounds were synthesized via classical approach, which was efficiently used for construction of the 4-thiazolidone ring, such the [2+3]-cyclocondensation.The synthesized compounds were evaluated for antiviral, antimicrobial, antifungal and other activities. The revision of pharmacological screening revealed that antimicrobial activity evaluation is actual and promising for these compounds.

Conclusions: The information concerning the synthesis of heterocyclic compounds with bicyclic 4-thiazolidinone fragment has been reviewed. It is revealed that further investigation of these compounds is promising direction in pharmaceutical chemistry.

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UDC 618.3-06:616-056.52

OBESITY IN PREGNANCY: OBSTETRIC AND ANAESTHETIC RISK FACTORS

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The aim of the research: to discuss the importance of «obesity and pregnancy» problem and to analyze a range of obstetric, perinatal and anaesthetic complications on the basis of literature reviews.

Materials and methods: The analysis of world literature sources on «obesity and pregnancy» problem has been performed. The subject of the study was represented by obstetric, perinatal and anaesthetic complications. Methods of synthesis, analysis and generalization have been used.

Results: Obesity is a growing problem both in the western world and in some developing countries. The World Health Organization (WHO) estimates the prevalence of obesity as pandemia. Obesity during pregnancy is one of the most important issues in obstetric care. Approximately 50% of pregnant women are overweight (BMI>25-30) or obese (BMI> 0). A lot of women are unaware of recommendations on reasonable gestational weight gain during pregnancy, and they are unable to lose weight after childbirth. It increases the risks for current and future pregnancies. Obesity leads to lower fertility and affects the state of an egg as well as the quality and development of an embryo at an early gestation stage. According to the Royal College of Obstetrics and Gynaecology, the incidence of the numerous diseases increases in obese women during pregnancy. Antenatal period: impaired fasting glucose and impaired glucose tolerance, gestational diabetes, miscarriages, stillbirth, preeclampsia, thromboembolia, sleep apnoea, maternal death, abnormalities in foetus growth and development. Labour period: induction of labour, prolonged labour and uterine inertia, operative delivery, caesarean section and postpartum bleeding, dystocia of shoulders, difficulty of monitoring foetal heart rate, problems associated with anaesthesia performed during labour, the use of general anaesthesia. Anaesthetic risks: difficulties associated with access, difficulties with the correct epidural catheter placement, with spinal anaesthesia and increased risk of displacement, problems in adequate breathing support. Postpartum period: delayed healing, increased risk of wound infection, high probability of hypogalactia, postpartum depression, long-term consequences for a new-born, baby weight gain, obesity.

Conclusions:

1. The analysis of data proved that the excessive pregravida weight is the most common risk factor in pregnancy.
2. Pathophysiological changes in obesity lead to obstetric, perinatal and anaesthetic complications, the most essential being gestational diabetes, pre-eclampsia, abnormal labour, increased operative delivery, foetal distress, stillbirth, thromboembolism, haemodynamic and respiratory changes during anaesthesia.
3. Taking into account the high risk of maternal, perinatal and anaesthetic complications associated with obesity, it is necessary to develop a complex of diagnostic and therapeutic measures and perform dynamic monitoring of pregnant women aimed at minimizing the risk factors.

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