

of Gynecologists and Obstetricians (CNGOF). Eur. J. Obstet. Gynecol. Reprod. Biol. 2013; 10(1): 25–32.

39. Smith G.C. Factors predisposing to perinatal death related to uterine rupture during attempted vaginal birth after caesarean section: retrospective cohort study / G.C. S. Smith, J.P. Pell, D. Pasupathy, R. Dobbie // *BMJ*. – 2004. – Vol. 329. – P. 353.

40. Thornton P, McFarlin BL, Park C, Rankin K, Schorn M, Stapleton S. Cesarean Outcomes in US Birth Centers and Collaborating Hospitals: A Cohort Comparison. *J Midwifery Womens Health*. 2016 Dec. : 6–69.

**Kaniowska L.V.**

*Candidate of Medical Science (PhD), assistant professor, Department of the Internal Medicine, Clinical Pharmacology and Occupational Diseases, Higher State Educational Institution of Ukraine “Bukovinian State Medical University”*

**Liakhovych O.D.**

*assistant, Department of the Internal Medicine, Clinical Pharmacology and Occupational Diseases, Higher State Educational Institution of Ukraine “Bukovinian State Medical University”*

### APPLICATION OF CLINICAL SITUATIONAL PROBLEMS IN THE STUDY OF ELECTIVE COURSE "AGE ASPECTS OF PHARMACOTHERAPY" BY STUDENTS

**Аннотация.** One of the useful components of training of future doctors during the learning of the elective course "Age aspects of pharmacotherapy" is the development of clinical thinking - the ability to transform the acquired knowledge into the ability to apply them in practice. The experience of application of situational tasks in teaching students of the elective course "Age aspects of pharmacotherapy" is presented. The role of these tasks in encouraging students to study the subject and develop clinical thinking is shown.

*Key words: situational tasks, pharmacotherapy, age aspects, clinical thinking.*

**Topicality.** The formation of professional competence in students is a complex process that includes many components. The purpose of higher education is to train highly educated and competitive professionals based on the formation of their knowledge, skills, abilities, as well as the activation of intellectual, moral, creative, and physical development of the individual. The use of simulation technologies is designed to increase the efficiency of the educational process, the level of professionalism, and practical skills of medical workers, providing them with the most effective and safe transition to medical activities in real-life conditions.

**Aim.** To consider the development of clinical thinking based on the application of situational clinical problems in practical classes.

**Main part.** An elective course "Age aspects of pharmacotherapy" as a subject aimed to train specialists who have sufficient theoretical knowledge and practical skills to conduct the most rational drug therapy for a patient taking into account his age characteristics. They also should be aware of methodology for selecting the most effective and safe drugs and their combinations, taking considering the individual characteristics of the organism, the course and the form of the disease, the presence of concomitant pathology based on the principles of evidence-based medicine [1-2].

Pharmacotherapy is an integrated concept that defines a set of treatments based on the use of drugs as well as the science of rational treatment of the patient (disease) with drugs. This integrated field of medicine is based on the achievements of theoretical and

experimental pharmacology, clinical pharmacology, a number of clinical disciplines that are closely related to pharmacotherapy. An integral part of rational pharmacotherapy is the acquisition of evidence-based medicine, the availability of clinical guidelines (recommendations, protocols) for the provision of medical care for certain diseases [3].

The ultimate goals of the discipline are set based on educational and qualification characteristics as well as on educational and professional training of doctors in the specialty and are the foundation stone for building the content of the discipline, namely: the formation of a holistic system of theoretical foundations of age aspects of pharmacotherapy; ability to make a pharmacotherapy plan taking into account the age, sex of the patient, stage, phase, course, the severity of the disease, the presence of complications and comorbidities. As a result of studying this discipline the student should know:

- modern terminology on pharmacotherapy;
- be able to interpret the results of the patient's examination to justify the choice of drugs for rational pharmacotherapy;
- be able to use knowledge about pharmacological effects, mechanism of action, pharmacokinetics of drugs, principles of their dosage, indications and contraindications to ensure individualized effective and safe pharmacotherapy;
- to acquire skills of elaboration of a plan of rational pharmacotherapy of a particular patient based on the principles of evidence-based medicine and the possibility of implementing the Formulary system in terms of a specific treatment facility to prescribe drugs

that are optimal in effectiveness, safety and affordable or available in a treatment facility [2].

Professional training of a highly qualified specialist during study, in particular, when choosing elective courses, is aimed not only at the accumulation of theoretical knowledge, but also at the formation of clinical thinking and the ability to make informed decisions under stress in a short space of time, which will increase competitiveness at the modern labor market. Classical forms of organization of the educational process give students the opportunity to accumulate theoretical knowledge, which, unfortunately, in the future, as experience shows, they cannot use in real conditions when interacting with the patient. That is why the accumulation of theoretical knowledge without practicing practical skills loses sense in the training of young professionals. This problem can be solved only by the introduction of interactive methods in the educational process, which allows modeling clinical situations. Due to the different levels of motivation and theoretical knowledge background of students, there is a need for a differential approach to the choice of teaching methods at the university [5].

One of the necessary components of training future doctors during the course "Age aspects of pharmacotherapy" is the development of clinical thinking, namely, the ability to transform the acquired knowledge into the ability to apply them in practice, and especially in emergency care. It is generally accepted that this ability should be developed in the senior courses "at the patient's bedside" during practice. The solution of situational problems of pharmacotherapy in the classroom with 5th-year students not frequently used since commonly believed that they accumulate knowledge, as well as become familiar with a variety of concepts, definitions, and pathological conditions. Our experience with the use of situational tasks in practical classes shows the opposite, e.i., the earlier you apply situational tasks, the faster future doctors develop elements of clinical thinking. At the same time, when it is the 5th year taken, it is more effective to solve problems on the topic under study. In our opinion, this is more productive than instructing a student to supervise a patient with many associated pathological conditions and their complications. The curation of the patient in a practical lesson is acceptable for students during practical training in internal medicine and practice [6].

The basis for situational tasks in pharmacotherapy are tasks on the following topics: pharmacotherapy in pulmonology, cardiology, gastroenterology, rheumatology and nephrology. In the situational task, you can program all the information that the student must learn on the topic being studied, or passed the sections of the curriculum. Solving situational tasks creates conditions for the active development of flexible, variable skills of professional thinking that are the most necessary components of the modern specialist's model. The generalized properties of problems are the following: the presence of some elements of complication in problem specification,

atypicality, non-standard situations; real-life setting problems in medical practice; possible problem nature, and interdisciplinary context of tasks. It is established that the quality of training of the future doctor is largely determined by the saturation, regularity, activity of training in solving non-standard, atypical problems of III level. Forms of setting these tasks, as mentioned above, can be varied: the most justified is task statement on a real patient, non-equivalent replacement of the patient can be medical history, sets of clinical and laboratory data, text task, business games, and more. The options for constructing atypical situational issues with various elements of complications are taken from modern medical practice and reflect a wide range of real-life problems of the specialist, for which he must be ready to solve [4].

The situational tasks in pharmacotherapy, created for each of the topics, are related to different sections of disease diagnosis, their syndromic management, clinical pharmacology of drugs of different pharmacological groups, are solved by students at the final stage of the lesson [8].

Solving situational problems allows the student to identify characteristic clinical symptoms and syndromes of the most common diseases, apply the most rational drug therapy in a particular patient based on evidence-based medicine, choose the most effective and safe drugs, adequate dosage form and dosage regimen, interpret and take into account the features of clinical pharmacokinetics, pharmacodynamics, side effects and interaction of the main groups of drugs, considering the individual characteristics of the organism, the course and form of the disease, the presence of concomitant pathology in the clinical practice [7].

When solving atypical problems, students have the opportunity to master the skills of selecting the best drug for a patient, learn how to apply in practice the algorithm of treatment of some categories of patients (elderly, children, pregnant women) which require special attention from doctors, since the risk of side effects of drugs is much higher and the health consequences can be more severe than for an "average" patient [6].

We emphasize once again that the elements of complexity, atypicality, which are the basis of the tasks, are taken from real situations of medical practice, which makes it possible to bring the educational process as close as possible to the real-life conditions of professional activity. The less idealization and simplification in educational tasks, the more significant they become in the professional context, and the in its turn the higher their level of problem, interdisciplinarity and effectiveness in the development of professional skills and clinical thinking of future professionals. Regarding the level of difficulty of educational tasks, it should be noted that it is largely defined by the complexity and number of unresolved professional problems included in the context of the content of the learning activity [10].

In educational tasks, especially text, as a rule, the principal part of these problems is removed by the

problem situation itself. For example, in educational test tasks the anamnesis data, clinical data, results of laboratory, instrumental researches, dynamics of a course of a disease, etc., as a general guide, are set in a condition (search is not required). Only part of the problem remains to be solved on its own: to determine the symptoms, syndromes of the disease, to develop an algorithm for further tactics of patient management: requires immediate first aid, doctor's consultation or possible self-medication, prescription of over-the-counter drugs, rational drug therapy [9].

The technology of solving professional problems in their problem statement requires the teacher to prepare a set of data that must be inquired by the student in the process of solving it, to clarify the history, the results of clinical, laboratory examinations, etc. Summarizing the above, we emphasize that the level of problem of the problem is determined not only by the number of issues contained in its context but also, of course, the level of their complexity and non-standard solutions. Only through thoughtful compilation and review can misunderstandings that arise in the actual application of situational tasks in learning and knowledge control [12].

It is no coincidence that 95% of students surveyed indicate that solving situational problems arises interest, awakens activity to classes, makes them discuss and allows them to better remember the material. It is known that with the development of interest in the discipline, all the psychological functions of the student are activated: memory, attention, thinking and more [11].

**Conclusions.** Applying situational tasks to control knowledge was more productive than traditional surveys and tests. The interview with students was more meaningful, as it was conducted in a specific clinical situation, instilled skills and abilities to apply the acquired knowledge in practice.

The use of atypical situational tasks makes it possible to intensify the educational process in the study of the discipline "Age aspects of pharmacotherapy" and to organize quality educational activities for students.

### References

1. Kokovs'ka OV, Mischenko IV, Pavlenko HP, Yudina KIe. Pidvyschennia efektyvnosti leksii yak aktual'na problema suchasnoi vyschoi medychnoi osvity v Ukraini [Improving the efficiency of lectures as an urgent problem of modern higher medical education in Ukraine]. V: Materialy navch.-nauk. konf. z mizhnar. uchastiu Aktual'ni problemy suchasnoi vyschoi medychnoi osvity v Ukraini; 2019 Ber 21; Poltava. Poltava; 2019, p. 109-11. (in Ukrainian)

2. Kupnovytska IH, Klymenko VI, Fitkovska IP, Belehay RI, Hubina NV, Danylyuk OI, ta in. Optyimizatsiia navchannia maibutnikh provizoriv shliakhom rozv'iazannia netyypovykh sytuatsiinykh zadach z dystsypliny «Klinichna farmatsiia» [Optimization of pharmacists training by solving not typical situational tasks in "Clinical pharmacy"

discipline]. Prykarpats'kyi visnyk NTSh Pul's. 2015;4:85-9. (in Ukrainian)

3. Zhurakivska OYa. Netradytsiini formy leksii, yak zasib pidvyschennia efektyvnosti navchannia studentiv u vyschykh medychnykh zakladakh [Nontraditional Forms of Lectures as a Means of Improving the Effectiveness of Teaching Students in Higher Medical Institutions]. Bulletin of Problems in Biology and Medicine. 2015;1(2):88-90. (in Ukrainian)

4. Kazakov VM, Vitenko VS, Talalaienko OM, Kamenets'kyi MS, Pervak MB, Kotlubiei OV. Vyznachennia ta zabezpechennia tsilei navchannia u medychnykh vyschykh navchal'nykh zakladakh vidpovidno do chynnykh derzhavnykh standartiv ta pryntsyviv Bolons'koho protsesu [Defining and ensuring the goals of education in medical higher education institutions in accordance with current state standards and principles of the Bologna process]. Donets'k; 2007. 100 p. (in Ukrainian)

5. Milerian VYe. Metodychni osnovy pidhotovky i provedennia navchalnykh zaniat v medychnykh vuzakh [Methodical bases of preparation and carrying out of educational employment in medical high schools]. Kiev: Khreschatyk; 2006. 80 p. (in Ukrainian)

6. Nazarenko NV. Motyvatsiia navchannia studentiv yak pokaznyk efektyvnosti suchasnykh pedahohichnykh tekhnolohii [Motivation of students' learning as an indicator of the effectiveness of modern pedagogical technologies]. Problemy osvity. 2005;45(Ch 1):120-4. (in Ukrainian)

7. Tetenev FF, Bodrova TN, Kalinina OV. Formirovanie i razvitie klinicheskogo myshleniya - vazhneyshaya zadacha meditsinskogo obrazovaniya [Formation and development of clinical thinking is the most important task of medical education]. Uspekhi sovremennogo estestvovoznaniya. 2008;4:63-5. (in Russian)

8. Chekman IS, Horchakova NO. Udoskonalennia vykladannia polozhen' dokazovoi medytsyny pry vyvchenni farmakolohii i klinichnoi farmakolohii [Improving the teaching of evidence-based medicine in the study of pharmacology and clinical pharmacology]. Medychna osvita. 2008;3:73-4. (in Ukrainian)

9. Kulchytskyi VY. Formuvannia profesiohenezu osobystosti studentiv medychnykh vuziv Ukrainy [Formation of professional knowledge of students' personality of medical institutes in Ukraine]. Medychna osvita. 2012;1:36-9. doi: <https://doi.org/10.11603/me.v0i1.1118> (in Ukrainian)

10. Pishak VP, Zakharchuk OI, Kryvchanska MI. Z dosvidu zastosuvannia keis-metodu ta proaktyvnoi prezentatsii pry chytanni leksiinoho materialu [From experience of case-method application and proactive presentation at reading of lectures]. Medychna osvita. 2013;1:16-20. doi: <https://doi.org/10.11603/me.v0i1.2083> (in Ukrainian)

11. Chernyshova LI, Akuliushyna MO. Interaktyvni metody navchannia yak suchasnyi

napriamok aktyvizatsii piznaval'noi diial'nosti studentiv u vyschykh navchal'nykh zakladakh [Interactive teaching methods as a modern direction of activating the cognitive activity of students in higher educational institutions]. V: Hohunskyi VD, redaktor. Materialy nauk.-metod. seminaru Shliakhy realizatsii kredytno-modulnoi systemy orhanizatsii navchalnoho

protsesu i testovykh form kontroliu znan studentiv; 2013 Kvi 30; Odesa. Odesa: Nauka i tekhnika; 2013, p. 83-8. (in Ukrainian)

12. Maksymenko SD, Filonenko MM. Pedahohika vyschoi medychnoi osvity [Pedagogy of higher medical education]. Kiev: Tsentr uchbovoi literatury; 2014. 288 p. (in Ukrainian)

***Fishchenko Volodymyr Olexandrovych***

*Doctor of Medical Sciences, Professor,*

*Head of the Department of Traumatology and Orthopedics,*

*Vinnitsia National Pirogov Memorial Medical University,*

*Vinnitsia, Ukraine*

***Mammadov Lachin Ali oglu***

*postgraduate student*

*of the Department of Traumatology and Orthopedics,*

*Vinnitsia National Pirogov Memorial Medical University,*

*Vinnitsia, Ukraine*

### **EFFICACY OF ADIPOSE DERIVED-MESENCHYMAL STEM CELLS FOR THE TREATMENT OF THE INTRA-ARTICULAR DISTAL FEMORAL FRACTURES**

***Фіщенко Володимир Олександрович***

*доктор медичних наук, професор,*

*завідувач кафедри травматології та ортопедії*

*Вінницького національного медичного університету ім. М. І. Пирогова*

*Вінниця, Україна*

***Маммадов Лачін Алі огли***

*аспірант кафедри травматології та ортопедії*

*Вінницького національного медичного університету ім. М. І. Пирогова*

*Вінниця, Україна*

### **ЕФЕКТИВНІСТЬ ВИКОРИСТАННЯ МЕЗЕНХІМАЛЬНИХ СТОВБУРОВИХ КЛІТИН ОТРИМАНИХ З ЖИРОВОЇ ТКАНИНИ В ЛІКУВАННІ ВНУТРІШНЬОСУГЛОБОВИХ ПЕРЕЛОМІВ ДИСТАЛЬНОГО ВІДДІЛУ СТЕГНОВОЇ КІСТКИ**

**Summary.** The aim of this work was to study the effectiveness of intraoperative administration of adipose derived-mesenchymal stem cells during internal fixation of intra-articular distal femoral fractures. We examined 48 patients with intra-articular distal femoral fractures. Patients in the study group (19 (39.58 %)) were additionally injected intraoperatively with adipose derived-mesenchymal stem cells. Patients in the control group (29 (60.42 %)) additional stimulation of chondrogenesis was not performed. Adipose derived-mesenchymal stem cells were obtained using the Lipogems® system according to the recommended method. The results of treatment were evaluated using Knee injury and Osteoarthritis Outcome Score (KOOS). Significantly better results were proved in the group of patients who underwent additional intraoperative local administration of mesenchymal stem cells derived from adipose tissue in the categories "Symptoms" (p=0.02), "Pain" (p=0.03), "Activities of daily living" (p=0.04), "Sport and recreation function" (p=0.0002), "Knee-related quality of life" (p=0.0005). As a result of the study it was possible to establish the high efficiency of intraoperative administration of adipose derived-mesenchymal stem cells during internal fixation of intra-articular distal femoral fracture with acute cartilage damage.

**Анотація.** Мета проведеної роботи полягала у дослідженні ефективності введення мезенхімальних стовбурових клітин з жирової тканини під час остеометалосинтезу внутрішньосуглобових переломів дистального відділу стегнової кістки. Обстежено 48 пацієнтів з внутрішньосуглобовими переломами дистального відділу стегнової кістки. Пацієнтам досліджуваної групи (19 (39,58 %)) додатково інтраопераційно вводили мезенхімальні стовбурові клітини отримані з жирової тканини. Хворим контрольної групи (29 (60,42 %)) додаткової стимуляції хондрогенезу не проводили. Мезенхімальні стовбурові клітини з жирової тканини отримували з використанням системи Lipogems® згідно рекомендованої методики. Результати лікування оцінювали з допомогою Knee injury and Osteoarthritis Outcome Score (KOOS). Доведено достовірно кращі результати у групі хворих, яким проводили додаткове інтраопераційне локальне введення мезенхімальних стовбурових клітин отриманих з жирової тканини за категоріями «Симптоми» (p=0,02), «Біль» (p=0,03), «Функція, повсякденне життя» (p=0,04), «Функція, спорт та активний відпочинок» (p=0,0002), «Якість життя» (p=0,0005). В результаті проведеного дослідження вдалося встановити високу ефективність інтраопераційного введення мезенхімальних