

MODERN TRENDS IN DEVELOPMENT SCIENCE AND PRACTICE

Abstracts of VII International Scientific and Practical Conference

Varna, Bulgaria
November 02 – 05, 2021

AWARENESS OF THE CONSEQUENCES OF COVID-19 IS AN INCENTIVE FOR IN-DEPTH STUDY OF HISTOLOGY AT THE MEDICAL UNIVERSITY

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Background. Coronavirus disease - 2019 has caused a great threat to public health. Although COVID -19 mainly affects respiratory and immune systems, but other systems like cardiovascular, urinary, gastrointestinal tract, reproductive system, nervous system, and integumentary system are not spared especially in elderly cases, and those with comorbidity. The predominant findings in fatal COVID-19 cases were DAD, coagulopathy, and hemodynamic compromise. Involvement of non-pulmonary organs was limited to parenchymal inflammation (myocarditis, hepatitis, and encephalitis), which was mostly mild. Direct viral cytopathic injury of extrapulmonary organs in general was not regarded as the cause of organ failure. The review would help clinicians and researchers to understand the tissue pathology, which can help better of the management and avoiding future risks (<http://dx.doi.org/10.1136/jclinpath-2020-206995>). Implementation of pedagogical and innovations on solving modern problems of the quality of higher education in the context of the pandemic in patients with COVID-19 is becoming especially important.

Objective is to outline the most effective methods in optimizing the teaching in histology to students at a medical university for better understanding of Covid-19 histogenesis.

Results In our scientific pedagogical research for many years (2015-2021) we have been using the Flexner report and John Dewey “project method”. An analysis of the literature on trends in medical education points to the problem of reducing the time devoted to teaching fundamental disciplines in new programs of higher medical education. This contradicts the basic model of medical education in the USA, known as the Flexner report (Cooke M, Irby DM, Sullivan W, Ludmerer KM. American medical education 100 years after the Flexner report. N Engl J Med. 2006 Sep 28;355(13):1339-443). To increase the effectiveness of teaching basic disciplines, including human physiology and morphology identify existing problems in different categories of students using questionnaires for teachers and students at the beginning and end of the course for training in the form of simultaneous study of microscopic anatomy (histology) and pathology, jointly developed by histologists and pathologists

in workshops using a virtual collection of histological and histopathological images. Scientific pedagogical research uses the experience of the American educator and philosopher John Dewey, who proposed a learning paradigm with simple memorization of information in the process of acquiring knowledge in accordance with their cognitive activity and interests. It is associated with the name “project method” which is the basic in various degrees of education in many countries. Many studies, including ours, are devoted to the role of interactive teaching methods, since the educational process takes place in conditions of constant active interaction of students and teachers. This is coeducation, where the student and teacher complement each other. The teacher is the organizer of the training. Organization of training includes modeling of real situations, the use of game elements and discussions, joint problem solving based on an analysis of circumstances and the corresponding situation. During group training, students learn to think constructively, make informed decisions, develop the ability to persuade and discuss.

We have to note, that the main task of basic biomedical discipline - histology is not to study pathological changes in organs, but first of all to understand the functional characteristics of normal structures, that allow the student to diagnose their possible changes. At the present stage, it is important to justify the role of the traditional educational method for the diagnosis of histological preparations in the formation of practical skills and the development of students' clinical thinking primary courses and it is imperative to introduce innovative methods to optimize vocational training.

The practical classes of students were conducted in classrooms at the Department of Histology and Embryology of the O.O. Bogomolets Medical University, and during quarantine we have organized on-line Zoom conferences, studying the units of histology: cytology, general histology and special histology. Knowledge of all learning units we carried out in horizontal direction for students of 1 and 2 courses. At each stage, on the basis of the research method, we gradually introduced into the educational process data of scientific fundamental research through interactive communication, multimedia interpretation by students of previous fundamental knowledge and their acquired skills to compare and distinguish their ??? skills, to rely on existing conceptual frameworks of knowledge, to interpret histological structures under normal conditions and under conditions of pathological changes. During the pandemic, we developed a methodology for diagnostic analysis of histological slides in the form of a multimedia presentation through the organization of ZOOM - conferences (1 and 2). At first, the discussion of the studied object (It should be noted that either the tissue or organ) is carried out from general to partial, with an emphasis on the integrity and connection of structure and function. During the conversation, the teacher directs the activities of students to consolidate the theory and practical skills. It should be emphasized that the obligatory element of discussion is ultrastructural, histochemical, functional characteristics of histological structures. In this process, discussions and setting up problematic issues (situations) are envisaged. To this stage of practical training according to the methodology, it is envisaged to prepare in the following sequence: 1) the student performs his homework – gives answers to the questions posed by the teacher; 2) the initial independent study by the student of histological slides in the atlas; 3) the student forms a picture in his album and determines the structures. At the first

stage (ZOOM-1), each student participates in the process of discussing multimedia presentations, and the teacher provides the necessary explanations for the formation of the ability to apply knowledge in the diagnosis of histological structures of the norm and interpret possible manifestations of pathological changes using information about COVID-19. If the organ is studied, then 1) it is necessary to determine its place in the functional system of the body, and provide a general characteristic (origin, determine the general plan of its structure, show parts or cells, identify diagnostic signs; 2) detailed histological analysis of structures and their functional properties is provided; 3) each histological specimen is studied in two stages. At the first stage, the student learns to "read" the micropreparation and form its "visual image" normally and acquires the ability to diagnose possible changes in the normal structure. At the second (ZOOM-2), the teacher and monitors have the acquisition and consolidation of practical skills in diagnostic analysis of histological specimen. 1) The teacher shows students for pattern recognition, electrograms and multimedia presentations of those micrographs that were presented to students for the formation of drawings. 2) Each student presents his drawings in albums and gives their characteristics. 3) The teacher and students analyze the activity of each student. 4) Conclusions are made by the teacher and determines the assessment (the number of points, taking into account the student's activity at all stages of the class and the results of the control test on Likar – NMU platform.

Conclusion. Our study of periodic literary sources and our accumulated pedagogical experience allows us to emphasize that in the foreground in modern approaches to studying in higher medical school there should be a practical component of the acquired knowledge on the basis of innovative methods of teaching. Здесь не хватает чего-то, например, We confirmed that basic medical and biological disciplines, as well as a high level of interest and involvement of students in independent work and motivation of students to further their continuous development is very important. We have identified a problem that students need the help of a teacher to comprehend the excessive amount of information available to them. Motivational learning is by nature a developmental learning: firstly, it is the development of skills in finding information, analyzing and processing it; secondly, the development of skills of students' independent work; thirdly, the development of professional competencies. First of all, students should learn in the process of activity and individually find meaning about their awareness of the importance of the role of fundamental knowledge for the future profession of a doctor.