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ОБЗОР
REVIEW

Multidisciplinarity and interdisciplinarity in medicine and education as a tool for improving the quality of patients' antitumor treatment

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Abstract. *Relevance.* Despite the advances in modern medicine, the improvement of treatment methods for many diseases, the overall incidence of cancer, as well as mortality from cancer, remains high. At the same time, the approaches to antitumor treatment themselves often significantly reduce the quality of life of patients, limit their ability to work, which causes certain social and economic damage from these diseases. In this regard, issues of improving the quality of antitumor treatment are among the priority issues in healthcare today. The purpose of this study is to find new possible tools and approaches to improve the quality of antitumor treatment for patients at different levels, including clinical and educational. It is possible to significantly change and improve the quality of oncological care for patients through the tools and technologies of accompanying therapy, including dental support, the clinical significance of which is critically underestimated today. Improving the methods of accompanying therapy is a multidisciplinary problem that can and should be solved exclusively in the context of interdisciplinary interaction of specialists of different profiles. Currently, the development of dental support is limited by a number of factors, such as clinical or organizational, but one of the most significant factors is the insufficient focus on this problem in medical education. Of course, the current pace of development of medicine, the introduction of new technologies, including artificial intelligence, increase the requirements for a modern specialist doctor and require extensive knowledge that goes beyond one discipline, including the presence of interdisciplinary thinking. *Conclusion.* Thus, the introduction of interdisciplinary approaches in the training of future dentists and doctors specializing in «General Medicine», training students at the intersection of different specialties (oncology and dentistry, dentistry and hematology) can improve the quality of dental support in particular, and the quality of antitumor treatment in general.

Keywords: interdisciplinarity, supportive therapy, dental supporting care in cancer patients, medical education

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Author contributions. A.M. Avanesov—preparation of the article text; analysis and addition of the text of the article; formulation of the main concept of the article, scientific editing of the text. V.A. Titova, E.N. Gvozdikova—preparation of the article text; participation in the discussion of the article materials; analysis and addition of the text of the article. All authors have made significant contributions to the manuscript preparation, read and approved final version before publication.

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Introduction

The increase in the overall oncological incidence in the Russian Federation was more than 7%, compared in 2023 to the previous 2022 [1]. The overall incidence rate of malignant neoplasms per 100 thousand of the population of Russia was 428.4, which is higher than in previous years. The prevalence rate of oropharyngeal tumors is no more than 3%. At the same time, 66% of tumors were detected in the late stage of the disease (stages III–IV), which certainly often determines the negative prognosis for tumors of this localization [2].

Search for ways to improve the effectiveness of antitumor treatment methods

Malignant neoplasms (MN) of the oropharyngeal region are very difficult to treat, associated with many factors (anatomical and functional disorders, speech limitations, nutrition, aesthetic disorders), significantly limit the ability of patients to work and cause high mortality. In this regard, the issues of prevention, early diagnosis and treatment of oropharyngeal tumors are one of the key tasks of healthcare today [3–5]. It is difficult to determine the most rational and optimal method of treating malignant neoplasms of this localization; in most cases, the approach is individual. At the same

time, clinicians and researchers are constantly searching for new treatment methods in all areas of antitumor therapy [6].

The main method of treatment is a surgical approach, but the resulting traumatic and aesthetic disorders significantly limit its radicality [7], which leads to more active development of non-surgical approaches to treatment, namely radiation therapy and chemotherapy.

Radiation therapy is a common method of non-surgical treatment of head and neck tumors, allowing to avoid severe traumatic consequences, dysfunction of the maxillofacial organs, aesthetic disorders, which is an extremely important aspect for the patient, since it is associated with the psychological individual characteristics of the personality. At the same time, modern methods of 3D radiation therapy, 3D radiation therapy planning allow to exclude or at least minimize the negative impact on the surrounding, peritumor healthy tissues [8].

Chemotherapy in the treatment of malignant neoplasms of the maxillofacial and oropharyngeal region is also widely used and today is one of the most promising and rapidly developing areas in oncology. The most common drugs in the treatment of tumors of this localization are platinum drugs (cisplatin),

5-fluorouracil and taxanes. [9]. At the same time, these drugs do not have a selective effect on other cells of the oropharyngeal epithelium, which leads to their damage and the development of complications such as chemotherapeutic mucositis. Relatively recently, about 20 years ago, a new direction in chemotherapy appeared — targeted therapy [10], capable of targeting the cellular mechanisms of carcinogenesis [11, 12]. This method of chemotherapy is associated with its prospects in general. The possibilities of combining chemotherapy with radiotherapy show good results in overall relapse-free survival of patients with malignant neoplasms of this localization [13, 14], which generally leads to a shift in the vector of development of antitumor treatment methods towards organ-preserving ones.

Despite the promise of non-surgical methods of treating tumors, a significant drawback of these methods is the high risk of developing side effects [15–17]. Side effects of radiation and chemotherapy reduce the positive results of the treatment. Oncologists are often

forced to stop or interrupt treatment, for example, due to the development of severe oral mucositis. At the same time, various factors are distinguished in the etiology of the development of side reactions during chemotherapy or radiation therapy: both local and general (Figure). Taking into account these factors (comorbidity [18], genetic markers[19], nutritional status[20], psychological state [21], microflora of the oral cavity [22–24], level of dental sanitation) when preparing the patient for the upcoming treatment can reduce the number and intensity of side reactions.

Dental support of patients as part of accompanying therapy in oncology

A set of measures for the preparation and support of a patient during antitumor treatment is called accompanying therapy. The creation of programs and development of accompanying therapy technologies that can improve the quality and effectiveness of antitumor

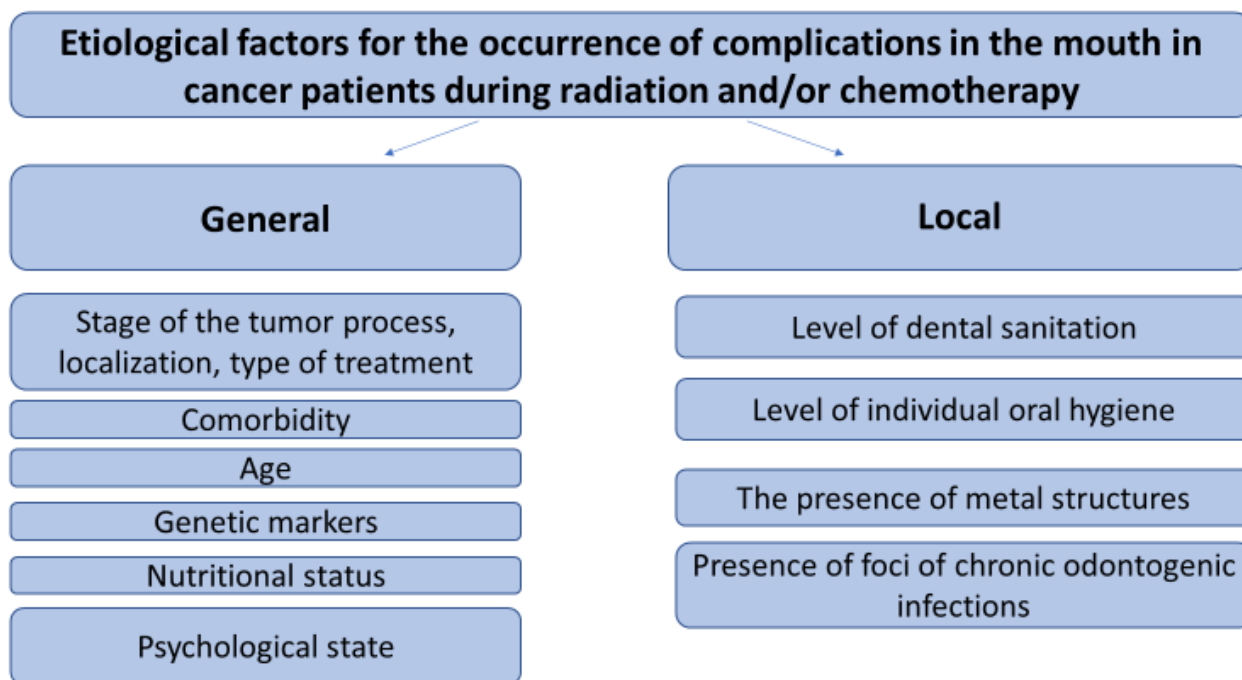


Fig. Etiological factors for the occurrence of complications in the mouth in cancer patients during radiation and/or chemotherapy

treatment of patients is a complex multidisciplinary problem. Currently, professionally performed expensive antitumor treatment without accompanying therapy often does not provide the patient with the quality of life necessary, which negatively affects the overall results [25, 26]. Accompanying therapy occupies an important place in oncology. The main goal of accompanying treatment of cancer patients is to reduce the frequency and severity of adverse events of antitumor treatment. The section of accompanying therapy dealing with issues of preventing adverse reactions in the mouth is dental accompanying therapy. Dental support allows to reduce the severity of developing complications, such as oral mucositis, which are often quite predictable, thereby increasing the effectiveness of antitumor treatment in general, given that the absence of complications or their mild severity allows for the treatment of patients without interruption, which has a beneficial effect on the overall prognosis of the disease [27–29]. Improving the methods of dental support is also a complex multidisciplinary problem that can and should be solved exclusively in the context of interdisciplinary interaction of specialists of different profiles [30–32]. This includes improving the methods of clinical prevention and treatment of complications arising in the oral cavity against the background of antitumor treatment (development and testing of new patient treatment protocols, search for new treatment tools and technologies) [33–35], and organizational aspects (legislative justification for the need for dental training of cancer patients), and, most importantly, improving the quality of medical education, namely the training of dental personnel with the appropriate competencies. In reality, cancer patients are often not examined by dentists at the pre-hospital stage for various reasons: on the one hand, patients are not informed about the need to contact a dentist to prepare for the upcoming antitumor treatment, on the other hand, there is often nowhere to refer the patient — there are no dental departments and dentists with the skills and knowledge to provide dental care to cancer patients.

The concept of interdisciplinarity and multidisciplinary in clinical practice and medical education

We call the training of future doctors, including dentists, in the field of clinical medicine and clinical dentistry interdisciplinarity. Of course, the current pace of development of medicine, the introduction of new technologies, including artificial intelligence, increase the demands on a modern medical specialist and require extensive knowledge that goes beyond one discipline, including the presence of interdisciplinary thinking. That is, interdisciplinarity meets the modern nature of the development of medicine in general and medical education in particular [36,37].

The need to create and work interdisciplinary or multidisciplinary teams in oncology, consisting of doctors of different specialties, is much discussed at international and domestic conferences. Up to 10–15 different specialists should be involved in the treatment of an oncological patient, including, of course, oncologists, radiotherapists, chemotherapists, rehabilitation specialists, nutritionists, narrow specialists, including dentists, otolaryngologists, anesthesiologists, defectologists, speech therapists, mid-level medical specialists, etc. This is a huge team, whose work is based on constant interaction and monitoring of the patients' condition. Unfortunately, in reality, the work of multidisciplinary teams is often implemented formally. Organizing such work in the context of practical healthcare is associated with many limiting factors. These include time costs, organizational difficulties, for example, the lack of necessary specialists in a medical institution, and others [38]. In any case, participation in a multidisciplinary team of specialists, or the practical application of interdisciplinary approaches requires a modern doctor to expand his knowledge in a certain area. Namely, a dentist must have sufficient knowledge in oncology, etc. That is, such multidisciplinary and interdisciplinary approaches are, among other things, difficult to implement due to the lack of trained personnel to solve such problems. That is, the problem of interdisciplinarity in medicine is a problem of interdisciplinarity in medical education. It should be noted that the entire educational process is built on the idea of obtaining knowledge on the structure of various disciplines, including in medical education. From the first year, medical institutes study various

disciplines — subjects that are often not related to each other. And a student cannot independently conduct and establish interdisciplinary connections between these disciplines-subjects. Also, the very structure of medical institutes and universities is built on departmental division, where within the framework of one department, specialists of one direction are united, who are aimed at solving one scientific problem. Departments that include specialists from different fields, such as oncologists, radiotherapists and dentists, are rare, and the problems that these departments are able to solve are interdisciplinary. The introduction of interdisciplinarity in teaching disciplines in universities should begin with the development of interaction between teachers of different departments and disciplines at the intersection of different areas: dentistry and oncology, dentistry and hematology.

The issues of improving the quality of education in universities, including medical ones, lead to the search for approaches to modernizing the education system in Russia. One of the problems in the pedagogical environment is the difficulties that students encounter when mastering educational material that requires combining knowledge from previous disciplines, analyzing acquired knowledge and interdisciplinary thinking. Students experience difficulties in combining their knowledge from different fields even within the framework of one specialty (for example, therapeutic dentistry and surgical dentistry), so targeted work of methodologists and teachers is needed to find new approaches in medical education to improve the quality of material assimilation by students. The most accessible methodological approach in this case is the analysis and demonstration of clinical examples from the teacher's experience with a detailed analysis of all clinical and organizational stages [39]. Interdisciplinarity and multidisciplinary in medicine and education are a modern necessity also due to the fact that the main goal of Russian healthcare is to increase the average life expectancy of the population. An increase in the average life expectancy of the population inevitably leads to an increase in the percentage of people who suffer from chronic diseases, and not one, but several. And this

reveals another problem of clinical medicine associated with the treatment of such patients with combined pathologies. What is today called comorbidity. Despite the large number of publications on this topic, the healthcare system still uses an approach in which each individual nosology is treated by a separate special leaf, according to individual clinical guidelines, complex approaches to the treatment of a comorbid patient are practically not used [40]. An oncological patient is most often a comorbid patient suffering from several diseases — this includes diabetes mellitus, cardiovascular pathology, and others. Taking into account the comorbidity of an oncological patient when planning antitumor treatment, including accompanying therapy programs, is a priority task for modern oncology. That is, an interdisciplinary approach to patient treatment is a clinical necessity today, due to a number of factors, including an increase in the average life expectancy of the Russian population. A gradual and comfortable transition to interdisciplinarity for all participants in the treatment process is a priority task for primary health care [41–43].

Conclusion

Thus, improving the quality of antitumor treatment of patients is a complex multidisciplinary and interdisciplinary problem that can and should be solved at different levels. First of all, at the educational level — the introduction of interdisciplinary clinical approaches in educational programs in medical universities from the early years of study (I, II year) for medical students of all specialties, both dentists and the specialty «General Medicine». This approach will allow students to develop clinical interdisciplinary thinking and in the future successfully become part of a multidisciplinary team for the treatment of patients with combined pathology, including oncological, as well as implement in practice programs of accompanying therapy, including dental support. Training medical personnel with knowledge in several specialties will improve the quality of oncological care and medical care in general.

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Мультидисциплинарность и междисциплинарность в медицине и образовании как инструмент повышения качества противоопухолевого лечения пациентов

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Аннотация. *Актуальность.* Несмотря на успехи современной медицины, совершенствование методов лечения многих болезней, общая онкологическая заболеваемость, а также смертность от онкологии остается на высоком уровне. При этом сами подходы к противоопухолевому лечению часто существенно снижают качество жизни пациентов, ограничивают их работоспособность, что обуславливает определенный социальный и экономический ущерб от этих заболеваний. В связи с чем вопросы повышения качества противоопухолевого лечения являются одними из приоритетных вопросов в здравоохранении сегодня. Целью настоящего исследования является поиск новых возможных инструментов и подходов для повышения качества противоопухолевого лечения пациентов на разных уровнях, в том числе клиническом и образовательном. Существенно изменить и улучшить качество онкологической помощи пациентам возможно за счет инструментов и технологий сопроводительной терапии, в том числе и стоматологического сопровождения, клиническая значимость которого сегодня критически недооценивается. Совершенствование методов сопроводительной терапии — мультидисциплинарная проблема, которая может и должна быть решена исключительно в контексте междисциплинарного взаимодействия специалистов разного профиля. В настоящее время развитие стоматологического сопровождения ограничено рядом факторов, например клинических или организационных, но одним из наиболее значимых факторов, является недостаточное акцентирование внимания на данной проблеме в рамках медицинского образования. Безусловно, современные темпы развития медицины, внедрение новых технологий, в том числе и искусственного интеллекта, повышают требования к современному врачу-специалисту и требуют от него обширных знаний, выходящих за рамки одной дисциплины, в том числе и наличие междисциплинарного мышления. Выводы. Таким образом, внедрение междисциплинарных подходов в обучении будущих врачей-стоматологов и врачей специальности «Лечебное дело», обучение студентов на стыке разных специальностей (онкология и стоматология, стоматология и гематология) способно повысить качество стоматологического сопровождения в частности и качество противоопухолевого лечения в целом.

Ключевые слова: междисциплинарность, сопроводительная терапия, стоматологическое сопровождение онкологических пациентов, медицинское образование

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