

MALIGNANT NEOPLASMS OF THE HEAD AND NECK IN THE ADULTS OF VORONEZH REGION: CURRENT NOSOLOGICAL STATISTICS, TRIGGERS AND PREVENTION

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Abstract. Tumors of visible localizations of the head and neck are significant in the structure of oncological morbidity. In the early stages, they respond well to surgical treatment, targeted and radiation therapy; in the later stages, there is a high degree of trauma, disability and mortality. The objective of the study was to identify parameters of oncogenic risks for their further implementation as applications for mobile devices computer programs. The study involved adults diagnosed with oncopathologies. The information was collected by anonymous survey; the authors have also specified the gradation of the most common localizations. The main findings of the study were presented as prevention guidelines and recommendations available to all Russian citizens. Questionnaires and programs on modern platforms were introduced to detect the studied factors and early symptoms of oncological diseases, thus contributing to preventive medicine concept and increasing the efficiency of healthcare.

Keywords: incidence of head and neck malignant neoplasms; medical and social factors of malignant neoplasms; questioning patients; preventive healthcare.

Introduction. According to the published data from the Global Cancer Statistics 2020 study, about 19.3 million new cases and almost 10 million deaths from cancer were recorded in 2020 worldwide [1]. At the same time, according to Cancer Journal for Clinicians there are changes in the statistics of oncological diseases. Oncology statistics 2020-2021 provides new data on cancer incidence in 185 countries. The specialists from the International Agency for Research on Cancer report that the number of new cases has reached 19.3 million and the number of deaths has reached 10 million [2].

Insufficiently effective measures for the early cancer detection in the population are the cause of a significant proportion of late (III-IV) stages of the initially diagnosed disease. Therefore, the timely diagnosed tumor is considered to be one of the criteria for providing quality of oncological care for the population, which ensures the effectiveness of treatment, and therefore the quality and life expectancy of patients; this, in turn, results in a reduction in the cost of palliative care and disability costs, and a reduction in non-recoverable losses of human resources due to

an increase in the rate of premature mortality from cancer to 52.6%.

According to WHO, the number of newly diagnosed cases reached 16 million in 2020 [3]. Presumably, according to experts from the World Cancer Research Foundation the number of cancer cases will increase by 30% by 2030 [4]. Globally, the increased absolute number of sick people is the result of both an increased number of the population and its aging. The reason for the increased number of cancer patients are environmental and lifestyle factors that are carcinogenic in nature, which are widely spread in the world and especially in developing countries.

More than 30,000 new cases of malignant neoplasms of the head and neck are registered annually in Russia. Thus, approximately 15 thousand patients die from this pathology every year. About 60-70% of patients starting treatment have III-IV stage of the disease, and 80% of them have regional metastases [5].

In 2020, 120 billion rubles were allocated for the implementation of the federal program "Fight against cancer", which occupies a leading position in the structure of financial support for socially significant diseases and

accounts for 56% of total funding. It was found that most of the cancer patients are of working age (from 30 to 60 years). And recently, the tendency to patients rejuvenating has been determined. According to the latest data there is also a high level of postoperative disability, up to 60-70%, the fact inevitably reducing the quality of life of the population.

The overall mortality in patients during the first year after being diagnosed reached 40.3% in the Russian Federation - this evidences insufficient oncological alertness of physicians at outpatient appointments, low awareness of the population about the factors contributing to the development of laryngeal tumors, and lack of wide access to specialized medical care.

In this regard, the main problems that complicate the effectiveness of therapy are the late detection of the disease and the features of the process (rapid growth and metastasis). These facts support the significance, importance and relevance of early diagnosis of these pathologies.

The selected medical and social issues demonstrate concentration of medical, psychological, social, demographic, economic aspects of the disease and determine negative social risk factors: loss of family, friends, work, livelihood, etc. health assessment, development of functional routing algorithms for patients with a high risk of cancer in the early stages of the disease. Also, the prevention program we have developed will allow monitoring the correction of oncofactors in patients over time.

It should be noted that this study has not been previously conducted for our region, which confirms the relevance of integrating statistical control over the regional verification of this pathology and introducing a program for its prevention in all sections of healthcare.

Material and methods. The study involved 420 adults (men and women of different ages, with confirmed malignant neoplasms of the head and neck) receiving treatment in oncological hospitals. The study also included adults without malignant neoplasms and diseases (n=420) examined by general practitioners and surgeons, head and narrow specialists (dermatologists, dentists, maxillo-

facial surgeons, otorhinolaryngologists, endocrinologists, etc.) for complaints in the head and neck areas during entry medical examination, who developed oncopathologies under extended examination, and people undergoing routine medical examination, occupational health checks.

All patients underwent an anonymous examination on the basis of healthcare facilities: outpatient clinics, including district hospitals, interregional outpatient cancer care centers, inpatient facilities, organization of regional healthcare management. There were 55 points in the questionnaire related to attitude and financial situation, harmful production factors of life, image and quality, mode and place of work, living conditions and other things. In the case of cancer patients, there were included questions to detect oncogenic triggers before and after illness.

In the course of the study, we used the data from the e-register of patients with malignant neoplasms of the head and cancer, findings obtained by primary care physicians, polyclinic and their interaction with narrow groups of hospital authorities and health authorities at the local level. The study also included 500 medical histories of the disease, clinical audits for 10 years.

Results. The study demonstrated that the number of patients diagnosed with malignant neoplasms of the head and neck increased during the survey in healthcare facilities due to the implementation of our project, and remote examination methods and analysis of liability to these diseases using the created computer and telephone programs contributed to a reduction in the time spent to collect anamnesis of oncogenic factors.

Medical history records from the archive of Voronezh oncological hospital reflecting the statistical parameters of oncological morbidity of the head and neck in the adult population per 100 thousand people were generated and analysed. The data obtained were as follows:

Oral cavity 2011 - 23.1, 2019 - 29.7;
Throat 2011 - 10.1, 2019 - 12.7;
Esophagus 2009 - 7.7, 2019 - 9.8;
Larynx 2009 - 28.7, 2019 - 31.1;
Thyroid gland 2009 - 78.6, 2019 - 120.5;
Skin melanoma 2009 - 44.5, 2019 - 66.9;

Skin (except melanoma) 2009 - 236.5, 2019 - 310.4;

Oral cavity 2011 - 28.8, 2019 - 34.4;

Throat 2011 - 38.8, 2019 - 49.7;

Esophagus 2009 - 30.9, 2019 - 30.2;

Larynx 2009 - 16.7, 2019 - 21.6.

Relevant triggers that cause oncological diseases, according to the World Health Organization, all-Russian study findings and our survey, were identified and compiled, classification by nosologies was made and their gradation according to the frequency of occurrence was determined as follows:

Skin (melanoma): PCBs, solar radiation, UV protection device, mechanical damage.

Skin (malignant neoplasms): arsenic and inorganic arsenic compounds, azathioprine, coal tar distillation, coal tar pitch, cyclosporine, methoxsalen plus ultraviolet, mineral oils, raw or lightly processed, shale oils, solar radiation, soot, light radiation, γ -radiation, mechanical damage.

Oropharynx: acetaldehyde associated with the use of alcoholic beverages, alcoholic beverages, betel cancer due to tobacco use, betel cancer without tobacco use, smokeless tobacco use, tobacco smoking, intense radiation, γ -absorption, constant consumption of hot food.

Oral cavity, lips and tongue: alcoholic beverages, betel cancer due to tobacco use, betel cancer without tobacco use, human papillomavirus type 16, smokeless tobacco use, tobacco smoking.

Larynx: acid mists, inorganic, alcoholic beverages, asbestos (all forms), tobacco smoking.

Thyroid: radioiodins, including iodine-131 (exposure in childhood and adolescence), x-rays, gamma radiation, diet and malnutrition, hypovitaminosis.

Salivary gland: external radiation, gamma radiation.

Tonsils: papillomavirus type 16, upper digestive system, acetaldehyde associated with human consumption of alcoholic beverages, candida.

Nose and sinuses: production of isopropyl alcohol using high acid, leather dust, nickel compounds, radium-226 and its decay products, radium-228 and its decay products, tobacco smoking, wood dust.

Nasopharynx: Epstein-Barr virus, formaldehyde.

Discussion. The dynamics of the incidence of head and skin tumors in the published statistics of Western countries and the Russian Federation remains steadily external. The level of disability and mortality from such diseases, despite ongoing therapeutic and diagnostic measures, remains colossally high in many cases due to insufficiently developed disease prevention and monitoring.

Oncological alertness of primary care physicians and public awareness of the consequences of long-term exposure to oncogenic risk factors and the first symptoms of the disease remain low. Due to the fact that we applied modern feasible methods of organizing healthcare to optimize the work of specialists and developed the direction of self-identification of microsymptoms, we made the population more aware of this topic, the quality of detection of head and neck tumors became better.

The study published epidemiological and statistical features of patients with malignant neoplasms of the head and neck. The level, structure and dynamics of morbidity have been studied, which will undoubtedly significantly contribute to the development of practical healthcare. Data on the incidence of cancer of the lip and oral cavity have been demonstrated: 354,864 people fell ill, 177,384 died worldwide; 10,827 fell ill, 10,040 died in Russia; after being diagnosed 41.5% of patients die from pharyngeal cancer, 34.2% of patients died from cancer of the oral cavity, 23% of patients died from cancer of the larynx.

The results of repeated surveys demonstrated that patients with malignant neoplasms of the head and neck changed their lifestyle and excluded the influence of aggressive oncogenic factors in 65 % of cases after the treatment and the studied methodological aids for prevention of oncological diseases. Patients without these pathologies responded to the recommendations in 15% of cases when they were re-interviewed and questioned.

Since our data includes information about Voronezh regional oncological hospital patients, they are highly significant in terms of analyzing patient cohorts treated in various

healthcare facilities in the Voronezh region. Thus, in cases where subjective parameters are to be considered, treatment outcomes can be influenced by various oncogenic factors, as well as social factors. Therefore, detection and observation of these triggers in diseased individuals and their correction during ongoing therapy, better compliance between the doctor and the patient, and the developed optimal patient routing algorithms will be beneficial achievements for public health.

This research study highlights the issues that require constructive changes in the approach to cancer diagnosis in the near future. Confirming statistical data have been obtained that the proportion of patients with microsymptoms of the initial stages of the disease during routine examination remains underestimated, and passing a survey and questioning in the created modules provides greater verification of diseases. In this connection, we offer our program, project modules and preventive recommendations for wide use in other regions of the country.

Conclusion. The study has provided statistical correlation of morbidity for 10 years in healthcare facilities of Voronezh and the Voronezh region, the data being compared with the all-Russian ones.

The leading medical and social oncogenic factors have been identified. We have created prognostic models that allows assessing the dynamics of morbidity. Most importantly, algorithms for preventive measures have been compiled and methodological recommendations for patients have been prepared, a questionnaire has been developed for medical workers to assess the tendency to develop ne-

oplasms, help recognize the first symptoms and monitor their dynamics and control, develop correct routing for further verification of health factors or cancer diagnosis.

The study demonstrated that the number of patients diagnosed with malignant neoplasms of the head and neck increased during the survey in healthcare facilities due to the implementation of our project, and remote examination methods and analysis of liability to these diseases using the created computer and telephone programs contributed to a reduction in the time spent to collect anamnesis oncogenic factors.

All these will increase the level of disease prevention, significantly reduce the incidence rate, the number of cases of temporary incapacity for work, disability and mortality of the population of the region, and, conversely, will increase the early detection of serious nosologies leading in the statistics of morbidity and mortality.

This is the first study to analyze the incidence of malignant neoplasms of the head and neck in our region. Based on questionnaires and surveys, a unique database including patients of all age groups was created; it considers the features of patients with detected oncopathologies, which helps develop the approach to the treatment of these patients. The above will contribute to better management of Department of Health resources.

The implementation of the study results will allow practical preventive healthcare authorities of the Voronezh region to improve diagnostics and treatment of head and neck malignant neoplasms and contribute to a higher level of cancer prevention.

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ЗЛОКАЧЕСТВЕННЫЕ НОВООБРАЗОВАНИЯ ГОЛОВЫ И ШЕИ У ВЗРОСЛЫХ ВОРОНЕЖСКОЙ ОБЛАСТИ: СОВРЕМЕННАЯ НОЗОЛОГИЧЕСКАЯ СТАТИСТИКА, ТРИГГЕРЫ И ПУТИ ПРОФИЛАКТИКИ

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***Аннотация.** Значительное место в структуре онкологической заболеваемости занимают опухоли видимых локализаций головы и шеи. На ранних стадиях они хорошо поддаются хирургическому лечению, таргетной и лучевой терапии; на поздних стадиях отмечается высокая степень травматизма, инвалидности и летальности. Целью настоящего исследования является определение параметров для оценки риска развития рака головы и шеи для последующего использования в качестве приложения для мобильных устройств и компьютерных программ. Для отбора параметров были использованы опросы онкологических пациентов, уточнена градация наиболее частых локализаций. Результаты исследования представлены в виде профилактических рекомендаций для жителей российских регионов. Внедрены опросники и программы на современных платформах для выявления изучаемых факторов и ранних симптомов онкологических заболеваний.*

Участие в разработанной программе формировало осознанное отношение к болезни, повышало приверженность к лечению и улучшало прогноз заболевания. Реализация таких проектов соответствует современной концепции профилактической медицины и повышает эффективность оказания медицинской помощи населению.

***Ключевые слова:** заболеваемость злокачественными новообразованиями головы и шеи; медико-социальные факторы злокачественных новообразований; опрос пациентов; профилактическое здравоохранение.*