Rybachuk Ann V., Hbur Zoriana V., Zavada Oksana G., Krylova Irina I. Malignant neoplasms of the lips, oral cavity and pharynx – state of the problem. Journal of Education, Health and Sport. 2021;11(11):346-357. eISSN 2391-8306. DOI http://dx.doi.org/10.12775/JEHS.2021.11.11.033
https://apcz.umk.pl/JEHS/article/view/JEHS.2021.11.11.033
https://zenodo.org/record/6412836

The journal has had 5 points in Ministry of Science and Higher Education parametric evaluation. § 8. 2) and § 12. 1. 2) 22.02.2019.

Received: 10.10.2021. Revised: 22.10.2021. Accepted: 30.11.2021.

MALIGNANT NEOPLASMS OF THE LIPS, ORAL CAVITY AND PHARYNX – STATE OF THE PROBLEM

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Abstract

The aim: to consider the existing methods of diagnosis, clinical course and treatment of most common malignant tumors of soft tissues of maxillofacial area and oral cavity. **Materials and methods**. Method of economical analysis, method of system analysis, medical – statistical method, mathematical modeling method, information-analytical method. **Results.** Types and clinic of the most widespread tumors of the specified area are considered. The technique of examination at the specified pathology with use of auxiliary methods of diagnostics is described. The main methods of special treatment of cancer patients are mentioned. The clinical course of four stages of maxillofacial cancer was analyzed on the

example of lip cancer. It is confirmed that morphological methods are the most informative of all currently available diagnostic tools and their brief description is given. **Conclusions.** Early diagnosis of malignant neoplasms, timely recognition and treatment of precancerous conditions against which cancer develops, is the main task of a general practitioner for the prevention of cancer. The dentist at the stage of planned rehabilitation of the oral cavity should pay attention to all changes in the mucous membrane. The formation of high-risk cancer groups and their in-depth examination can increase and detect precancerous diseases and malignant neoplasms in the early stages, which can serve as a real basis for the prevention of cancer of the maxillofacial region, oral mucosa, tongue and lips.

Key words: clinical model and signs of oncological diseases; malignant neoplasms of the maxillofacial area; group of increased cancer risk.

Реферат. Цель: на основе анализа современной литературы уточнить состояние проблеми наиболее распространенных опухолей мягких тканей челюстно-лицевой области и полости рта. **Материалы и методы.** Методология данного исследования основана на использовании общеизвестных методов научного познания, а именно: метод экономического анализа; метод системного похода и анализа; медико-статистический метод; метод математического моделирования. **Результаты.** Рассмотрены виды и клиническое течение наиболее распространенных опухолей указанной области. Описана методика обследования указанной патологии с использованием дополнительных методов диагностики. Рассмотрены основные методы специального лечения онкологических больных. Проанализировано клиническое течение четырех стадий рака челюстно-лицевой области на примере рака губы. Доказано, что морфологические методы являются наиболее информативными из всех существующих сегодня методов диагностики и приведено их краткое описание. **Выводы.** Ранняя диагностика злокачественных новообразований, своевременное распознавание и лечение предопухолевых состояний, на фоне которых развивается рак, являються основними задачами врача общей практики в его работе по профилактике онкопатологии. Важную роль играет стоматолог на этапе проведения плановой санации полости рта, который должен обратить внимание на все изменения слизистой оболочки. Формирование групп повышенного онкологического риска и их углубленное обследование позволяет выявить предраковые заболевания и злокачественные новообразования на ранних стадиях, что может служить реальной основой для

профилактики рака челюстно-лицевой области, слизистой оболочки полости рта, языка и губ.

Ключевые слова: клиническая модель и признаки; злокачественные новообразования челюстно - лицевой области; группа повышенного онкологического риска.

Introduction. The social and medical significance of the problems of malignant neoplasms of the maxillofacial area, as well as tumors of other localization, is dictated by high morbidity and mortality of the patients resulted from late diagnosis and lack of physicians' awareness about the types, clinic and treatment tactics [1, 2].

According to the data of International Agency for Research on Cancer (IARC), there were 18.1 million cancer cases detected worldwide, and in 2020 this figure equaled to 19.3 million; the number of cancer deaths grew as well.

According to epidemiological studies, the incidence of malignant neoplasms of the lips, mouth and pharynx is associated with certain patterns: the influence of environmental factors, household habits, diet, etc. So early diagnosis of malignant neoplasms depends mainly on the oncological vigilance of general practitioners and their further tactics for patients.

The aim: to consider the existing methods of diagnosis, clinical course and treatment of most common malignant tumors of soft tissues of maxillofacial area and oral cavity.

Materials and methods: The methodology of this study is based on well-known approaches to the methodology of scientific knowledge, such as: the method of economic analysis, this is a scientific way of studying, formation and development of economic phenomena and processes; system approach which is research methodology studying the object as a whole set of elements in the set of relations and connections between them, i. e. consideration of the object as a system model. At the present stage, on the basis of generalization of different variants of the system approach, conditions are created for the construction of a general theory of systems - systemology. The systems approach develops and concretizes such categories of dialectics as connection (philosophy), relations, content and form, part and whole, and so on. The main tool of the system approach is system analysis; besides, medical - statistical method, method of mathematical modeling was used.

Results: The total number of cases of lips, mouth and pharynx (ICD codes C00-C08, C46.2, C09-C14) neoplasms remains high. Every year, more than 5.000 new cases of this area cancer are registered, affecting the vast majority of the male population (Fig. 1).

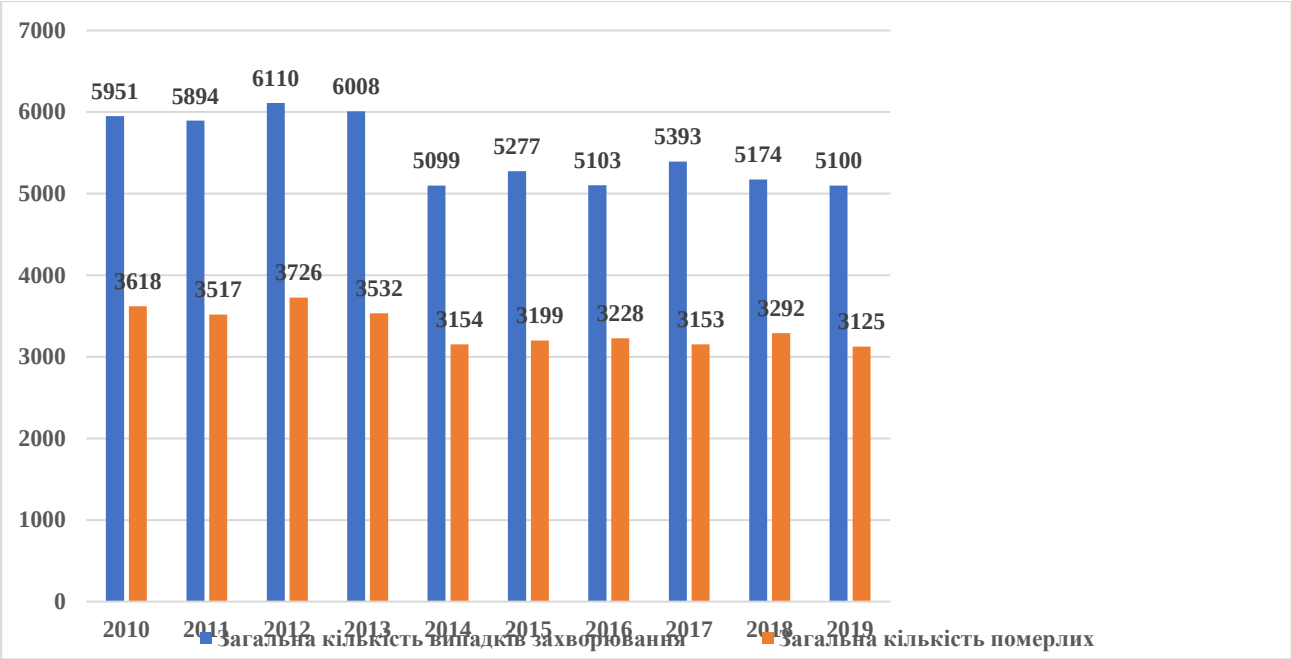

Fig. 1. Incidence rates of mortality from neoplasms of lip, mouth and pharynx among population of Ukraine in 2010-2019

At the same time, the corresponding indicators per 100 thousand population clearly show the reduction of malignant neoplasms of the lip, which in 2010 was 2.1; in 2014 - 1.7 and in 2019 - 1.2. Despite improvement of diagnostic equipment, accessible localization for examination by a doctor and the possibility of detection at earlier stages of the disease, this figure is almost twice as high as the world standard, which requires some improvement in the system of timely diagnosis and the provision of highly qualified medical care.

A comparative analysis of the incidence of malignant neoplasms of the mouth and pharynx per 100 thousand population showed that in 2010 they were 5.3 and 4.8, respectively, and in 2019 - 5.7 and 5.9, respectively, which shows a significant increase morbidity. The same trend applies to mortality rates.

In 2020, compared to 2019, the severity of the number of newly detected cases of malignant neoplasms of the lip, mouth and pharynx tended to increase (Table 1).

Table 1

Stages of the disease among first detected patients, %

Area damaged	Stage I-II		Stage III-IV	
	2019 year	2020 year	2019 year	2020 year
Lip	90.3	83.9	8.5	14.6
Mouth	37.8	31	53.5	58.7
Pharynx	12.9	12.4	78.3	74.9

As we can see from the table, malignant neoplasms of the lip in 83.9% of cases are detected in stage I - II, and in the case of the oral cavity and pharynx, on the contrary, advanced cases have a significant advantage. They are difficult to treat and have a high mortality rate within 1 year after diagnosed and this is a social problem. The patients with an indeterminate stage make up a certain percentage.

Discussion. Treatment of malignant tumors is a difficult and not always solved task. Difficulties in the treatment of patients with malignant tumors are determined primarily by biological features, patterns of growth and development of the tumor [1, 3, 6]. An equally important issue is the training of personnel involved in the treatment of this group of patients, the legal framework governing preventive and curative measures, etc.

The above determines the importance of knowledge of the principles and methods of diagnosis, treatment of tumors of the head and neck, as well as their prevention.

The importance of timely diagnosis of tumors is determined not only by the frequency of cases, but also by the peculiarity of these forms of cancer. Most neoplasms of the maxillofacial area are difficult to examine and require complex diagnostic methods, half of patients die very quickly, as this group of tumors is of high malignancy, they grow rapidly and metastasize early [7, 9].

The research is carried out for the purpose of differential diagnosis and determination of the morphological structure of the neoplasm. Since the malignant tumors of the maxillofacial area surgery is usually accompanied by significant destructive changes in the patient's appearance, an oral cavity biopsy is considered as one of the most important diagnostic measures; it allows to determine the indications for combination treatment [8, 10].

A large number of tumors occur in the maxillofacial area (along with the skin). Detection of malignant tumors of the maxillofacial area should be an integral part of therapeutic and dental examinations, as early diagnosis of the disease is extremely important [2, 3, 5].

Signs of malignant tumor and precancerous conditions of the maxillofacial area:

• long, sluggish course of the process (the presence of ulcers that do not heal within 2-3 weeks) [6, 7];

• failure of conservative treatment;

• increase in the size of the pathological focus, despite the adequate treatment [4];

• the appearance of consolidations, bleeding [1, 5];

• the appearance of dense, enlarged, painless regional lymph nodes [2, 5, 9];

• the appearance of mobility of one or more intact teeth, accompanied by constant pain [10];

• gradually increasing paresis of facial muscles, paraesthesia and numbness in the area of the infraorbital and maxillary nerves;

• the appearance on the lips or in the mouth of formations that do not heal for a long time and tend to increase in size. It can be a red spot, whitish spot, ulcer, induration, node [4].

The most reliable prevention of cancer is the elimination of risk factors that contribute to its development, and timely highly qualified treatment of precancerous conditions persons.

Table 2

Classification of symptoms and diagnosis of cancer of the maxillofacial area

Symptoms and diagnosis of lip cancer		
Symptoms of tumor pathology	Patient management tactics	Possible types of special treatment
Painless induration or rough plaque, rising slightly above the surrounding tissues, or papillary-type; it bleeds, painful for a long time ulcer, bleeds on contact. Enlargement of the lymph nodes of the chin, submandibular area	Clinical examination Cytological, histological examination (morphological verification of the diagnosis) Puncture of enlarged lymph node. Oncologist consultation (clarifying diagnostics)	Surgical Radiation therapy Photodynamic therapy (PDT) Laser surgery Combined, comprehensive treatment Treatment in a specialized oncology hospital
Symptoms and diagnosis of mouth cavity and pharynx cancer		
Symptoms of tumor pathology	Patient management tactics	Possible types of special treatment
The presence of a long unhealed ulcer in the mouth, constant pain in the mouth. Swelling or thickening of the cheeks. White or red spots on the gums, tongue, tonsils or mucous membranes of the mouth. Sensation of a foreign body when swallowing. Difficulty at chewing or swallowing. Difficulty at moving the jaw or tongue. Numbness of the tongue. The appearance of swelling in the neck.	Clinical examination and palpation; fibrolaryngoscopy with histological, cytological examination (morphological verification of the diagnosis). Consultation of an oncologist (clarifying diagnosis).	Combined, comprehensive treatment. Reconstructive plastic surgery. Treatment in a specialized oncology hospital.

Among malignant tumors of the face, oral organs and jaw bones, the most common are cancers arising from the epithelium of the mucous membrane, which, covering dissimilar

organs, in the area of their location is characterized by topographic differences of morphological, histophysiological and histochemical nature [6, 7].

Analysis of the incidence of malignant neoplasms of the oral cavity showed its dependence on a number of factors, among which it is worth mentioning bad habits (smoking, alcohol abuse, etc.), injuring elements of orthopedic structures in the oral cavity, environmental factors, etc. [1; 4]. These combinations are especially dangerous. Some patients have a history of a single mechanical injury (biting the cheek while eating or talking, damage to the mucous membrane with a tool during treatment or tooth extraction).

At the initial clinical examination of the patient by a general practitioner or specialized specialists skin, mouth, breasts, genitals, rectum, thyroid gland, lymph nodes, etc. [3, 5, 9] are subject to mandatory examination.

Tumor markers in laboratory diagnosis are substances which concentration in biological fluids (blood, urine, etc.) indicates the development of the tumor process, provides additional information about its prevalence and, most importantly, the effectiveness of treatment.

Periodic examination of such markers after treatment makes it possible to suspect the development of tumor recurrence previously traditionally used in oncology diagnostic methods. The main methods for determining the level of tumor markers in the serum: radioimmunological, immunoenzymatic and chemiluminescent assay using specific antibodies to these proteins.

It is known that the epithelium of the tongue, the bottom of the mouth, pharynx is the integumentary tissue of ectoendodermal origin. Up to 75-80% of cases of oral cancer occur in the tongue, bottom of the mouth, cheek mucosa, alveolar process.

In oncology there are 4 main independent methods of special treatment of cancer patients: only surgical, radiation, chemotherapeutic and combined complex treatment method [4, 10].

With these methods, patients with malignant tumors can be completely cured. The effectiveness of treatment depends on the histological structure, stage of development, location, degree of malignancy, individual characteristics of the tumor and the patient’s general condition.

However, the originality and basic patterns of cancer are determined not only by the biological properties of the tumor, but also by those specific changes in the body that are more or less characteristic of patients with malignant tumors.

First of all, it should be borne in mind the presence of concomitant pathology and complications caused by the development of cancer (anemia, intoxication, loss or violation of physiological functions of an organ affected by tumor) or, and this is more important, a pathological background that contributes to tumor progression. Important for treatment planning is the fact that many cancer patients have a decrease in both specific and nonspecific immunity.

In malignant tumors of the jaw bones, routine radiography is sometimes insufficient. In such cases, they resort to contrast fistulo- or roentgenography of the maxillary sinus. In cancer of the upper jaw, especially in the initial stages, in the process of preparing the patient for surgery, it is extremely important to determine the exact boundaries of the tumor. Due to the ability of malignant tumors of the maxillofacial area to rapid and unrestricted growth, as well as the anatomical proximity of various organs, each of which may be the site of primary cancer, the value of tomography is undoubted.

At a cancer of the upper and lower jaws, tumors of other bodies of an oral cavity, CT allows to reveal approximately borders of malignant growth at depth from 1 to 7 cm and more. Layered examination of the maxillary sinuses, upper and lower jaws is recommended in direct and lateral projections.

Usually the layers with an interval of 0.5-1 cm are determined. This makes it possible to identify areas of exophytic growth of malignant tumors, foci of bone destruction, the clarity of air cavities [2, 4, 8, 10].

Malignant tumors of the oral cavity develop in men 5-7 times more often than in women. People aged 60-70 y.o. are most often ill.

For the treatment of cancer patients they use combined or complex methods of treatment with different interpretations.

The combined method of treatment is the use of two or three basic (surgical, radiation, chemotherapy) methods or the combined one, or polychemotherapy.

The complex method of treatment is the use along with the main methods secondary ones - hormone therapy, immunotherapy, hyperthermia and others.

The best treatment results are observed in the early stages of malignant tumors. In these cases, depending on the location and histological structure of the tumor, it is usually sufficient to use one of the methods of treatment, often surgery, or radiation therapy. In extensive malignant tumors, combined and complex treatment is required, and in the terminal stages - only symptomatic treatment [1,10].

Comprehensive prevention of malignant neoplasms includes primary (preclinical) and secondary (clinical) prophylaxis.

Primary prophylaxis of malignant neoplasms means the prevention of malignant tumors and previous precancerous conditions by eliminating or neutralizing the effects of adverse environmental factors and life style, as well as by increasing the non-specific resistance of the body.

By secondary we mean oncohygienic prevention, i. e. detection and elimination of the possibility of human exposure to carcinogenic environmental factors, as well as the detection and use of opportunities to reduce the dangers of such exposure. The range of influence in this direction is extremely large [2, 8].

For morphological studies it is necessary to obtain a sample of tissue formation. For this purpose, the patient is assigned a biopsy.

Morphological methods are the most informative of all currently available diagnostic tools [5, 7] and include histological and cytological examination and allows to make an unambiguous diagnosis.

Immunohistochemical study is performed to study the growth rate of tumor cells, to assess the possibility of hormonal treatment, to study the response of tumors and cells to chemotherapeutics.

There are five stages of treatment [1, 3, 8, 9].

1. Preparatory stage. At this stage, the main attention should be paid to the patient's psyche. Under the influence of a strong stressful situation, a patient sent to a cancer clinic develops acute psychogenic reactions, among which the depressive syndrome predominates. In conversations, the medical specialists should inform the patient about the success of cancer treatment, the possibility of an organ-preserving approach. At the corresponding indications sedatives should be used. This stage is directly related to special medical and non-medical training aimed at better tolerability of surgery and other therapeutic measures.

2. Therapeutic (main) stage. It includes surgery to remove the tumor and preserve or plastic restoration of the anatomical basis of the function of the operated organ. It can also be a course of special radiation therapy aimed at the tumor, while preserving of the surrounding tissues. Widespread introduction of reconstructive and plastic surgery in clinical oncology allows to distinguish a plastic, aesthetic stage in the treatment stage, during which visible and hidden functional and anatomical defects are eliminated.

3. Early recovery (postoperative) stage. It is important to carry out measures of this stage in natural, biological terms to 2 - 3 weeks without interruptions. It is advisable to use proven in oncology methods to improve regeneration: low-energy lasers, EHF therapy. At the end of the stage it is necessary to appoint exercises of special medical physical training [1, 10].

4. Late recovery phase. This stage is a direct continuation of the previous one. It includes continuation of exercise therapy, therapy with regulation of the function of the operated organ. At the same time, special antitumor chemotherapy and radiation therapy are prescribed. In this regard, rehabilitation measures are planned taking into account the treatment to eliminate their mutual suppression. The stage takes from 1 to 6 months, it depends on the individual treatment plan. During this time, one can solve the problem of aesthetic rehabilitation, including corrective surgery, scar grinding.

5. The social stage. At this stage, the primary importance is directed to the psychological status of the cancer patient, his social and labor orientation. As practice shows, at this stage the patients are in dire need of moral and therapeutic support to normalize psychological status and homeostasis.

When carrying out rehabilitation of oncological patients it is important to adhere to the basic principles: to keep necessary radicality of the carried-out treatment; do not follow the postulate of remote rehabilitation after treatment, and pay more attention to reconstructive surgery; remember the relationship and compatibility of treatment and rehabilitation processes, so that they are not to the detriment of each other [2, 3, 4].

The rehabilitation process must be continuous. This is the only way to succeed in restoring the active status of a cancer patient in life.

In general, 40% of patients achieve stable remission. The outcome of treatment depends mainly on the spread of cancer - 5-year survival at T_1 is 85%, at T_2 - 75%, at TK_3 - 60% and at T_4 - 30%. Indicators of an unfavorable prognosis include tumor growth in the tongue, lower jaw, muscles of the bottom of the mouth [5].

Terms of observation: 1st year after treatment is one time in 3 months; 2-3 years after treatment once every 4 months; 4-5 years after treatment once every 6 months; 6th and subsequent years after treatment - once a year [1, 7, 9, 10].

Conclusions. Thus, the main task of a general practitioner in his work on prevention of oncological pathology is the timely recognition and treatment of precancerous conditions against which cancer develops, as well as early diagnosis of malignant neoplasms. No less

important role is played by the dentist at the stage of planned rehabilitation of the oral cavity, when attention should be paid to all changes in the mucous membrane.

Medical examination of the population, formation of groups of increased oncological risk and their in-depth examination allow to increase and detect precancerous diseases and malignant neoplasms in the early stages, especially for visual localization.

Early and timely diagnosis of precancerous diseases and adequate treatment can serve as a real basis for the prevention of cancer of the maxillofacial region, mucous membranes of the mouth, tongue and lips.

The authors declare no conflict of interests.

Source of funding – personal funds.

Article is a result of proactive work.

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