

Exploring Temporal Trends in Maxillofacial Malignancies in an Industrial Megalopolis: A Retrospective Study from Eastern Ukraine

Anastasiia P. Kuznetsova, Oleksii M. Havrylenko, Yuliia V. Hnatyshyn

Department of Surgical Stomatology, Kharkiv National Medical University, 4, Str. Nauky, 61022 Kharkiv, Ukraine;

Department of Epidemiology, Institute of Public Health, 8, Str. Universytetska, 61000 Kharkiv, Ukraine

Abstract

Background

The aim of research is retrospective studying of the frequency and structure of affect by malignant neoplasms of the maxillofacial area in one of the industrial district of Kharkov.

Methods

The results of retrospective studying of the frequency and structure of affect by malignant neoplasms in the maxillofacial area in one of the industrial districts of Kharkiv are described in the article. The retrospective analysis was carried out taking into account the age, sex, localization and disease stages.

Results

According to the results of the performed research it was established that the incidence during 10 years tended to growth, predominantly with the aged and senile people. The high percentage of the initially revealed patients with the advanced stages of disease was defined.

Conclusions

Performing the retrospective analysis of the frequency and structure of malignant neoplasms of the maxillofacial area among the population of the industrial district of Kharkov, it should be stated that over the last decade the incidence trended upwards.

Analysis of the frequency of detection of certain stages of the disease indicated that primary revealed advanced forms of cancer patients.

The obtained data can be evaluated as the consequence of insufficient efficiency of preventive examinations and late address of patients.

Key words: frequency, structure, localization, malignant neoplasms in the maxillofacial area, retrospective analysis, advanced stages

Background

One of the pressing issues in the modern medicine is prevention, early diagnostics and treatment of oncology diseases. According to the data of some authors, about 5% of the patients from the stated cohort possesses head and neck tumors [1, 2, 3]. The frequency of oropharynx cancer has risen for 11.3% in Ukraine for the last 18 years, and the steady tendency of incidence rate persists. The data of the National Cancer Registry of Ukraine suggest the high frequency of finding malignant tumors in the western regions, lower figures in the eastern and southern regions, and the central and northern regions are in-between [4]. In the available literature sources there are results of research of the frequency and structure of oncopathology of the maxillofacial localization among the population of the Zakarpattia and Poltava Regions. Analyzing the obtained data the authors are of the joint ascertaining the tendency for the increase in the oncopathology frequency in future and with aging of the population, predominance of the pathology among men and village residents, absence of qualitative preventive examinations, insufficient oncoawareness, diagnostic mistakes. The peculiarities of the image-anatomic screening and distribution of oncology diseases with the population in the regions under investigation are given, too. In particular, the diseases with predominant localization in the oral mucosa, upper and lower jaw bones are found with Zakarpattia residents. Among the people residing in Poltava Region the predominance of affections in the tongue, oral mucosa, salivary glands, upper jaw bone areas is noted. And the differences in the presented data about the frequency of advanced forms - stages of diseases III and IV are evident, namely: 40% of the sick persons are from Poltava Region and 63.49% of patients are from Zakarpattia [5, 6].

Detailed studying of the frequency and structure of malignant neoplasms in the maxillofacial area in Kharkov Region was not performed. Conduction of the stated examinations is a rational method for obtaining the information about the incidence rate in the eastern regions of the country and for further improvement of the ways of diagnostics and prevention of these diseases.

The aim of research is retrospective studying of the frequency and structure of affect by malignant neoplasms of the maxillofacial area in one of the industrial district of Kharkov.

Methods

The retrospective analysis of the incidence rate of malignant neoplasms of the maxillofacial area was performed among the residents of Ordzhonikidze District of Kharkov during 10 years. The research was carried out based on the archive materials from the Municipal Dental Care Polyclinic No. 5 of Kharkov, being the basis of the Dental Surgery, Maxillofacial Surgery and Dentistry Department in the Kharkov Medical Academy of Postgraduate Education. The materials of the regular medical check-up coming from oncology rooms in the family medicine polyclinics No. 18 and No. 9 of Kharkov were studied, too. It is worth mentioning, that among the population residing in the stated district are workers and retired people, who were once employed in the Tractor Manufacturing Plant, Electrotiazhmash, Ball-and-Roller Bearing Manufacturing Plant. The stated enterprises are located in the same district and their operation produces great effect on the ecostructure.

The retrospective analysis of the incidence rate of malignant neoplasms (MN) of the maxillofacial area (MA) was performed taking into account the age, sex, localization and disease stages. The main sources of information about oncology patients of the dental profile were the primary documentation: oncology patients log book by district, outpatient cards (form No. 45/o), regular medical check-up check-lists (form No. 30) and consolidated annual reports (10 documents). When

assessing the data all patients were distributed by age of "Group B" according to the classification of the International Statistical Classification of Diseases and Related Health Problems, 10th Revision of WHO Assembly 43 (1998). The following age groups were taken into account: 0–14 years (childhood), 15–20 years (adolescence), 21–34 years (youthful age), 35–44 years (first period of mature age), 45–59 years (second period of mature age), 60 years and over (elderly and senile age). The process localization was distributed based on the ISC classification, namely: lip – C00.9; tongue – C02.9; salivary glands – C08.9; oral mucosa – C03.9; jaw bones – C76.0. The cancer degree of incidence was defined by the TNM system, where: T (tumor) – primary tumor, N (nodus) – metastases into regional lymph nodes, M (metastasis) – distant hematogenous metastases. Grouping by stages was as follows: Stage I: T1N0M0. Stage II: T2N0M0. Stage III: T3N0M0; (T1, T2 or T3) N1M0. Stage IV: T4 (N0 or N1)M0; (T0-T4) (N2 or N3) M0; (T0 – T4)(N0-N3) M1 [7].

Results

By the number of patients on the dispensary list in the Dental Care Polyclinic No. 5 during 2003-2013 the total number of patients were registered: 93 (100%) patients with MN MA, of which men 71 (76.34%) and 22 (23.66%) women, patients with advanced forms 41 (44.1%). Directly according to the results of research in 2010 there were 11 (100%) patients found, of which 3 (27%) patients with advanced forms; 13 (100%) patients, of which 6 (46%) with advanced form 2011; 12 (100%) patients, of which 5 (66%) with advanced form in 2012; 15 (100%) patients, of which 10 (66%) with advanced form. The obtained results are graphically presented on Error! Reference source not found..

Based on the analysis of the data presented on the diagram of **Error! Reference source not found.** the steady growth of MN MA since 2006 is evident. At that, the relative share of advanced cases of diseases has doubled over 10 years since 2013 with peak in 2013. The results of studying the frequency and structure of MN MA taking into account the sex, age groups of patients and process localization are given in Table 1.

Table 1. Frequency and structure of malignant neoplasms in the maxillofacial area with men and women of different age groups.

Localization	Sex	21-34		35-44		45-59		60 and over		Total		Overall total	
		abs	%	abs	%	abs	%	abs	%	abs	%	abs	%
Tongue C02.9	male			1	3	15	43	12	34.2	28	80.00	35.00	100
	female					4	11	3	8.5	7	20.00		
Oral mucosa C03.9	male			1	5	7	32	12	54.5	20	90.91	22.00	100
	female			1	5			1	4.5	2	9.09		
Salivary glands C08.9	male					2	14	2	14.2	4	28.57	14.00	100
	female	1	7.1	1	7	2	4.2	6	42.8	10	71.43		
Upper lip C00.9	male									0	0.00	1.00	100
	female					1	100			1	100.00		
Lower lip C00.9	male					3	20	12	80	15	100.00	15.00	100
	female									0	0.00		
Lower jaw bone C76.0	male					1	50			1	50.00	2.00	100
	female					1	50			1	50.00		
Upper jaw bone C76.0	male					1	25	2	50	3	75.00	4.00	100
	female							1	25	1	25.00		
Overall total	male			2	2	29	31	40	43	71	76.34	93.00	100
	female	1	1.7	2	2	8	8.6	11	11.8	22	23.66		
Total		1	1.7	4	4	37	40	51	54.8	93	100		

When studying the data about the gender identity, presented in Table 1, the predominance of maxillofacial area oncology patients among manhood became evident. The frequency of MN MA among men and women made 3.2:1 ratio, accordingly. The characteristics of the age groups among sick persons points to the fact that, according to the obtained data during 10 years, the diseases in the groups of elderly and senile age persons as well as among the persons from the second period of mature age were registered oftener. By the incidence frequency the patients from the first period of mature age go next. Oncological diseases among the juvenile persons were seldom found and registered. In other groups the incidence was not registered. Hence, the incidence rate of malignant neoplasms

with the active working age people of 60 years old were found with 42 (45%) of those examined and the frequency grew with age.

The results of retrospective studying of the frequency of the definite localization of MN MA among men and women of different age groups are shown in Table 1. The data about the localization of diseases depending on the gender identity are graphically presented on **Error! Reference source not found..** According to the obtained data, it becomes evident that the diseases with the localization of tongue cancer dominate with men belonging to the second period of mature age, and the diseases of salivary glands dominated with women belonging to the groups of elderly and senile age persons.

The analysis data about the frequency of malignant neoplasms in the maxillofacial area of different localization taking into account the process stages are presented in Table 2.

Table 2. Detection frequency of malignant neoplasms in the maxillofacial area of the certain localization taking into account the process stages.

Disease stage / Tumor localization		I	II	III	IV	Overall total
Tongue C02.9	abs	3	12	7	13	35
	%	8.57%	34.29%	20.00%	37.14%	100%
Oral mucosa C03.9	abs	2	5	6	9	22
	%	9.09%	22.73%	27.27%	40.91%	100%
Salivary glands C08.9	abs	2	8	2	2	14
	%	14.29%	57.14%	14.29%	14.29%	100%
Upper lip C00.9	abs	1				1
	%	100.00%	0.00%	0.00%	0.00%	100%
Lower lip C00.9	abs	12	2		1	15
	%	80.00%	13.33%	0.00%	6.67%	100%
Lower jaw bone C76.0	abs		2			2
	%	0.00%	100.00%	0.00%	0.00%	100%
Upper jaw bone C76.0	abs	1	2	1		4
	%	25.00%	50.00%	25.00%	0.00%	100%
Overall total	abs	21	31	16	25	93
	%	22.58%	33.33%	17.20%	26.88%	100%

The graphical representation of the data about the frequency of finding malignant neoplasms of the definite localization taking into account the process stages are given in **Error! Reference source not found.**

The results of analysis of the archives data, which are graphically presented in **Error! Reference source not found.**, demonstrated dominating discovery of diseases on early stages I and II with 52 (55.61%) patients suffering from affect of salivary glands, upper lip, lower jaw bone and upper jaw bone, oral mucosa and tongue in anterior parts. The mentioned localizations are available for the examination. Availability of the advanced stages III and IV of disease were registered with 41 (44%) of the patients with the localization in the oral mucosa distal parts, tongue lateral surface and base. The mentioned mouth cavity areas are difficult to be accessed for the individual examination. Pathological foci of the stated localization can be found in case of medical examination using special techniques. The data about finding sick persons on extra-early and early diagnostics stages were not available.

Conclusions

Performing the retrospective analysis of the frequency and structure of malignant neoplasms of the maxillofacial area among the population of the industrial district of Kharkov, it should be stated that during 10 years the incidence trended upwards, which can be explained by the availability of industrial enterprises and stepping up of their operation in this region.

According to the results of the examination, malignant neoplasms of the maxillofacial area dominated among the population of elderly and senile age of over 60 years old as well as with the persons of the second half of mature age from 45 to 59 years old. The frequency of oncological diseases among the socially active able-to-work population of the region under 60 years old was 45.7% with the domination of cancer finding with men. At that, the diseases with the

localization in the tongue, oral mucosa and lower lip areas were found the most frequently. Salivary glands were more often affected with women.

The analysis of finding the frequency of definite stages of the disease pointed to the fact that advanced cases of stages III and IV were initially found with 41 (44.08%) patients. And the localization in the areas being the most difficult to be accessed for the individual examination was observed predominantly, the possibility of finding of which grows in case of the attentive professional examination using special techniques. The localization of affects in the areas accessible for the visual examination was defined with 52 (55.61%) people with stages I and II of the disease. The obtained data can be evaluated as the consequence of insufficient efficiency of preventive examinations and late address of patients. The found age, gender and image-anatomic peculiarities should be taken into account when creating risk groups and specifying the algorithms of preventive examinations.

References:

1. A.I. Paches Head and neck tumors. M: Medicine 1983; 202—235 M: Medicine 2000; 220—250.
<https://www.google.com.ua/#q=%D0%BF%D0%B0%D1%87%D0%B5%D1%81+1983>
2. Malignant tumors in the maxillofacial area: Educational materials for medical and postgraduate education higher institutions. Dental Department/ I.M. Fediaev, I.M. Bairikov, L.P. Belova, T.V. Shuvalova. - M., N. Novgorod: Medical book, Publishing House NGMD, 2000. — 160 pages.
http://www.prostomatology.ru/files/books/hirurg/zlokachestvennie_opuholi.pdf
3. M.I. Davydov Incidence rate of malignant neoplasms among the population of Russia and CIS countries in 2009 / M. I. Davydov, Ye. M. Axel // Bulletin of

the Russian Oncology Scientific Center named after N. N. Blokhin of RAMS . —
2011 <http://cyberleninka.ru/article/n/zabolevaemost-zlokachestvennyimi-novoobrazovaniyami-naseleniya-rossii-i-stran-sng-v-2008-g-1>

4. Tendencies of the incidence rate of malignant neoplasms in the mouth cavity, pharynx and lip among the population of Ukraine. S.V. Grischenko, I.M. Nagorny, A.A. Chistiakov, A.G. Gonchar, D.P. Temnichenko, L.V. Chistiakova, O.N. Diachkov, Ye.P. Paska // Magazine "Oncosurgery" No. 2, 2009, p. 42.
<http://www.chemoemboli.ru/images/journal/oh0209.pdf>

5. Sokolova N. P. Diagnostics quality, retrospective and perspective analysis of the incidence rate of malignant neoplasms in the maxillofacial area: abstract of Dissertation for the Degree of the Candidate of Medical Sciences: Specialty 14.01.22 "Dentistry" / N.P. Sokolova - P., 2001.-17 pages/
http://revolution.allbest.ru/medicine/00398195_0.html

6. Karavan Ya.R. Retrospective analysis of the incidence rate of malignant neoplasms in the maxillofacial area, quality of their diagnostics and development prediction: abstract of Dissertation for the Degree of the Candidate of Medical Sciences: Specialty 14.01.22 "Dentistry" /Ya.R. Karavan.- P., 2014.-23 pages/
<http://liber.onu.edu.ua/opacunicode/index.php?url=/notices/index/IdNotice:664730/Source:default#>

7. International Statistical Classification of Diseases and Related Health Problems, 10th Revision adopted by the 43d World Health Organization Assembly. Kiev, 1998. - p. 307. <http://mkb-10.com/>