Acta Clin Croat 2020; 59:445-454
doi: 10.20471/acc.2020.59.03.08

Original Scientific Paper

# ANALYSIS OF THREE-YEAR PREVALENCE OF ORAL CAVITY, NECK AND HEAD TUMORS – A RETROSPECTIVE SINGLE-CENTRE STUDY

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SUMMARY – The purpose of the study was to retrospectively analyze the prevalence of oral cavity, neck and head tumors recorded at our department over a period of 3 years. Retrospective analysis included archival data on cancer patients treated at our department during the 2015-2017 period. A total of 1005 patients with proven carcinomas were selected for final analysis. Cancers were detected by ultrasound, x-ray, biopsy and clinical diagnosis. The mean age of patients was 58.4±19.3 years. The majority of cases (n=264; 26.3%) were detected in the 7th decade of life. The most common cancers were basal cell carcinoma in 374 (37.2%) and squamous cell carcinoma in 228 (22.7%) cases. The male-to-female ratio was 1.7:1. There was no statistically significant age difference between genders. Recurrence of tumor occurred in 31 patients. The most common risk factor in both groups was sun exposure. The most common sites were lower lip, cheek and frontal region in men, and cheek region and nose in women ($p<0.001$). Men were found to be more susceptible to cancer development. This study showed differences between age groups, i.e. elderly patients had a much higher probability of developing cancer as compared to younger patients.

Key words: *Three-year data; Prevalence; Oral cancers; Risk factors; Retrospective analysis*

## Introduction

Oral cancers are malignant neoplasms that develop in the tissues of the mouth[1]. Oral cancers are the 6th most common malignancy worldwide. Despite the general global trend of a slight decrease in the incidence of oral cancers, the incidence of tongue cancer is increasing[2]. About 90% of all tumors are histologically subtyped as oral squamous cell carcinoma (OSCC), which is the most common type of oral cancer. Each year, about 275,000 cases are newly diagnosed worldwide, reporting 128,000 deaths annually[3]. In the European Union, there is an estimate of 66,650 new cases each year[4]. At an early stage, OSCC has a survival rate of 80% in comparison to late stages (T3-T4) when the survival rate is only 20%-30%[5]. The incidence varies by geographic regions, and more than half of all cases occur in developing countries[6]; however, in the last decade, an increase has been observed in the percentage of young patients[2].

Early diagnosis of oral cancer is the most important factor affecting overall survival and prognosis. Several countries in Europe have shown a significant increase in the prevalence of oral cancer, especially in men. Oral cancer is more common in men and usually occurs after the 5th decade of life[4]. For instance, in Europe, head and neck cancers are the 4th most common group of cancers among men[7]. France has one of the highest incidence rates; in 2012, the world-standard-

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Received May 23, 2018, accepted October 22, 2018

ized incidence for men was 21.5 cases *per* 100,000 person-years and in France over 35 cases *per* 100,000 person-years for men[8,9].

Apart from tobacco and alcohol, dietary factors, human papillomavirus (HPV) infection, genetic factors, and oral hygiene have also been reported as risk factors. Social inequalities were related to oral cavity cancers, linked to factors directly affecting behavior and lifestyle of different genders[3,10]. Studies have reported an alarming lack of awareness about oral cancer, symptoms and early diagnosis. The lack of such knowledge needs to be addressed by further public education, and possibly targeted at high-risk groups[11]. Tobacco and alcohol consumption are still the principal etiologic factors for the development of squamous cell carcinoma (SCC). However, in addition, a variety of suspected risk factors such as chronic irritation, poor oral hygiene, viral infection, occupational exposure, nutrition, and genetic factors have been proposed for the development of oral cancer[12-16].

The aims of this study were to retrospectively analyze the prevalence of oral cavity, neck and head carcinoma and evaluate the number of different types of cancers encountered at our department over a 3-year period (2015-2017).

## Materials and Methods

The study was designed as retrospective analysis of data from the Department of Maxillofacial Surgery, University Clinical Center of Kosovo, Prishtina, Kosovo. The research was conducted in full accordance with the Declaration of Helsinki on medical protocols and ethics. The study was approved by the Prishtina Faculty of Medicine Review Board. Patient consent for participation was not required since data were retrieved from our archive database, protecting privacy and confidentiality of patient data.

The archive contained number of cancer patients treated at our department from 2015 to 2017. A total of 1005 patients with proven carcinomas of the oral cavity, neck and head were selected for final analysis. Cancers were detected by ultrasound, x-ray, biopsy and clinical diagnosis. Cases were divided into groups according to histopathologic diagnosis of cancer type. Statistical analysis was performed by Statistical Package of Social Sciences SPSS 21 (IBM, New York, USA). Student's t-test and Pearson's $\chi^2$-test were performed according to the type of variable. Cox regression was calculated for the evaluation of hazard ratio (HR) between independent and dependent variables. Statistical significance for all tests was set at $p<0.05$.

## Results

Of the 1005 cases, 936 (93.1%) cases were diagnosed by clinical evaluation, 182 (18.1%) were confirmed by biopsy, 132 (13.1%) were confirmed by imaging (computed tomography, orthopan, craniogram), and 56 (5.6%) with ultrasound. The mean age of the study patients was 58.4±19.3 years. The majority of cases (n=264; 26.3%) were detected in the 7$^{th}$ decade of life (60-69 age group). Altogether 580 (57.7%) cases were elderly people aged ≥60 (Fig. 1). Furthermore, 19 (1.9%) cases were detected in children aged ≤9 years.

In cancer patients, the most common type of occupation was retirement (n=467; 46.5%) and field worker (n=207; 20.6%) (Table 1). We did not establish the types of field work, since it could contribute to cancer as one of the risk factors. Sun exposure was determined as the most frequent risk factor in more than half of cases. Treated patients had undergone surgery for their primary tumor. Only a minority of them received chemotherapy or radiotherapy (alone or combined). The mean time elapsed from diagnosis to treatment (time-to-treat) was more than 22 months.

The most common oral cancer was basal cell carcinoma (BCC), found in 374 (37.2%) cases, followed by SCC in 228 (22.7%) cases as the second most prevalent cancer. Other types of cancers are listed in Table 2.

The male-to-female ratio of cancer patients was 1.7:1. According to age groups, there was no statistical difference between male and female patients, since most patients of both genders belonged to elderly groups. Recurrence of tumor occurred in 31 patients, but with no statistical gender difference. However, 50 men had multiple-site tumors compared to 15 cases in women ($p=0.019$). The most common risk factor in both groups was sun exposure and contribution of multiple factors, mostly a combination of sun exposure, alcohol and tobacco use (Table 3).

Distribution of cancers by anatomic regions was different depending on patient gender ($p<0.001$) (Table 4). The most common sites were lower lip, cheek region and frontal region in men, and cheek region and nose in women.

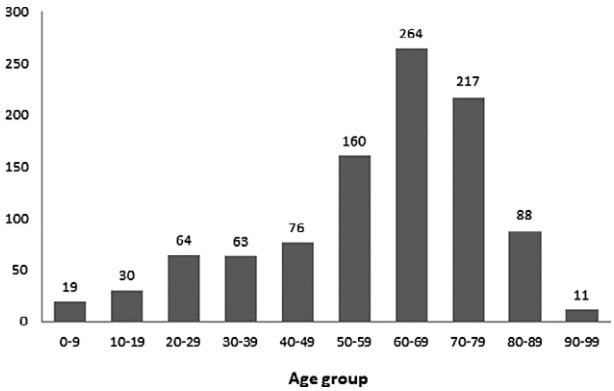


*Fig. 1. Age distribution of patients with oral and maxillofacial tumors.*

In the cheek region, skin carcinoma and carcinomas at buccal site of the mouth and mucosa were identified. As this region was identified most commonly, we calculated HR for independent variables (patient risk factors) to predict the occurrence of cancer in the cheek anatomic region (Table 5). Statistically significant risk factors for cancers in the cheek region were male gender, age 60-69 years, retired and field workers, cancer in only one region, and patients with known risk factors such as sun exposure, tobacco use, or their combination.

## Discussion

The purpose of the current study was to retrospectively analyze the prevalence of oral cavity, neck and head carcinomas, and estimate the prevalence of cancer subtypes at our department over a period of 3 years. The mean age of cancer patients in our study was 58.4 years, which coincided with the findings from UAE (54.9 years)[17], Thailand (59.1 years)[18], Iran (61.2 years)[19], Malaysia (61.2 years)[20], Jordan (62.5 years)[21] and Japan (65.2 years)[22] but higher than data reported from Nigeria (42.2 years)[23] and India (47.8 and 49.7 years)[24,25]. However, the majority of patients (n=580 cases; 57.7%) were elderly people aged >60. As previously confirmed in many other studies[19,21,26,27], male patients predominated with the male to female ratio of 1.7:1 (for example, HR for cheek cancer in male patients was 1.497; p=0.003).

Disparity in the prevalence of different cancer subtypes might be attributable to difference in the distribution of risk factors in each patient or geographical features of the region where the patient lived[17,23]. In our study, alcohol and smoking were not the dominant

*Table 1. Basic characteristics of patients with oral and maxillofacial tumors*

| | Patients with oral and maxillofacial tumors (N=1005) |
|---|---|
| Age (years) | 58.4±19.3 |
| Gender: | |
| Male/Female | 636/369 |
| Year of cancer diagnosis: | |
| 2015 | 311 |
| 2016 | 376 |
| 2017 | 318 |
| Profession: | |
| Worker | 122 |
| Housewife | 122 |
| Retiree | 467 |
| Pupil | 27 |
| Student | 43 |
| Child <6 years | 17 |
| Field worker | 207 |
| Birthplace: | |
| Village | 679 |
| City | 326 |
| Risk factors: | |
| Sun exposure | 518 |
| Tobacco | 57 |
| Alcohol | 12 |
| Viral infection | 4 |
| Chemical materials | 4 |
| No data | 201 |
| Multiple factors | 209 |
| Family history | 59 |
| Time-to-treat (months), mean | 22.3±27.8 |
| Time-to-treat (months), median | 8.5±0.9 |
| Treatment: | |
| Surgery | 985 |
| Chemotherapy | 1 |
| Radiotherapy | 1 |
| Medications | 17 |

*Table 2. Prevalence and types of cancer diagnosed during 3-year period (2015-2017)*

| Histology of cancer | Total number of cancers (N=1005) |
|---|---|
| Adenocystic carcinoma | 1 (0.1%) |
| Pleomorphic adenoma | 7 (0.7%) |
| Adenoma sebaceum | 2 (0.2%) |
| Ameloblastoma | 3 (0.3%) |
| Angiofibroma | 5 (0.5%) |
| Hemangioma, calcifying | 1 (0.1%) |
| Basal cell epithelioma | 1 (0.1%) |
| Lymph node metastatic carcinoma | 5 (0.5%) |
| Mucoepidermoid carcinoma | 2 (0.2%) |
| Sebaceous carcinoma | 1 (0.1%) |
| Verrucous carcinoma | 6 (0.6%) |
| Basal cell carcinoma | **284 (28.3%)** |
| Adenoid basal cell carcinoma | **53 (5.3%)** |
| Basal cell carcinoma, cornifying | 2 (0.2%) |
| Basal cell carcinoma cutis | 3 (0.3%) |
| Basal cell carcinoma with squamous metaplasia | 1 (0.1%) |
| Basal cell carcinoma, pigmented | 2 (0.2%) |
| Basal cell carcinoma, adenoid cystic | 3 (0.3%) |
| Basal cell carcinoma, adenoid keratinizing | 1 (0.1%) |
| Basal cell carcinoma, fibrotic | 3 (0.3%) |
| Basal cell carcinoma, hyperkeratotic | 1 (0.1%) |
| Basal cell carcinoma, keratinizing | 2 (0.2%) |
| Basal cell carcinoma, keratotic | 2 (0.2%) |
| Basal cell carcinoma, superficial | 17 (1.7%) |
| Chalazion | 1 (0.1%) |
| Epidermal inclusion cyst | 1 (0.1%) |
| Clear cell hidradenoma | 2 (0.2%) |
| Squamous cell carcinoma | **204 (20.3%)** |
| Squamous cell carcinoma, corneal | 7 (0.7%) |
| Squamous cell carcinoma, cornifying | 15 (1.5%) |
| Lymph node metastatic squamous cell carcinoma | 1 (0.1%) |

| Histology of cancer | Total number of cancers (N=1005) |
|---|---|
| Squamous cell carcinoma, non corneal | 1 (0.1%) |
| Cylindroma | 2 (0.2%) |
| Dermatofibroma | 1 (0.1%) |
| Dermatofibrosarcoma | 2 (0.2%) |
| Fibrous dysplasia | 5 (0.5%) |
| Epulis | 3 (0.3%) |
| Fibromatous epulis | 3 (0.3%) |
| Giant cell epulis | 9 (0.9%) |
| Fibroepithelial polyp | 2 (0.2%) |
| Fibrohistiocytoma | 1 (0.1%) |
| Fibrolipoma | 17 (1.7%) |
| Fibropapilloma | 2 (0.2%) |
| Fibromyxoma | 1 (0.1%) |
| Pyogenic granuloma | 20 (2.0%) |
| Hemangioma | 5 (0.5%) |
| Capillary hemangioma | 9 (0.9%) |
| Cavernous hemangioma | 4 (0.4%) |
| Verrucous hemangioma, partial | 1 (0.1%) |
| Sclerosing hemangioma | 4 (0.4%) |
| Hemangioma simplex | 7 (0.7%) |
| Hemangioma simplex, capillary | 1 (0.1%) |
| Hemangioma simplex, cutaneous | 2 (0.2%) |
| Fibromatous histiocytoma, benign | 1 (0.1%) |
| Hyperkeratosis | 16 (1.6%) |
| Pseudoepitheliomatous hyperplasia | 1 (0.1%) |
| Keratoacanthoma | 25 (2.5%) |
| Keratosis | 1 (0.1%) |
| Actinic keratosis | 9 (0.9%) |
| Seborrheic keratosis | 33 (3.3%) |
| Solar keratosis | 10 (1.0%) |
| Leukoplakia | 21 (2.1%) |
| Lichen planus | 3 (0.3%) |
| Lichen simplex, chronic | 1 (0.1%) |
| Lichenoid solar keratosis | 1 (0.1%) |
| Hodgkin lymphoma | 1 (0.1%) |

*Table 2. Continued*

| Histology of cancer | Total number of cancers (N=1005) |
|---|---|
| Lipoma | 15 (1.5%) |
| Malignant melanoma, metastatic | 4 (0.4%) |
| Malignant melanoma, nodular | 3 (0.3%) |
| Mucoepidermoid carcinoma | 1 (0.1%) |
| Myoblastoma | 1 (0.1%) |
| Dermal nevus | 1 (0.1%) |
| Epidermodermal nevus | 5 (0.5%) |
| Nevocellular nevus | 6 (0.6%) |
| Pigmented nevus | 14 (1.4%) |
| Pigmented nevus, epidermodermal | 15 (1.5%) |
| Pigmented nevus, intradermal | 18 (1.8%) |
| Sebaceous nevus | 3 (0.3%) |
| Verrucous nevus, intradermal | 1 (0.1%) |
| Antoni A neurilemmoma | 1 (0.1%) |
| Neurofibroma | 4 (0.4%) |
| Nevocellular nevus, intradermal | 1 (0.1%) |
| Non-Hodgkin lymphoma | 1 (0.1%) |
| Osteoma | 3 (0.3%) |
| Papilloma | 17 (1.7%) |
| Papilloma, inflammatory | 1 (0.1%) |
| Papilloma, verrucous | 6 (0.6%) |
| Polyposis | 1 (0.1%) |
| Rhabdomyoma | 1 (0.1%) |
| Sebaceous trichofolliculoma | 1 (0.1%) |
| Sebaceoma | 1 (0.1%) |
| Spindle cell nevus | 1 (0.1%) |
| Syringoma | 1 (0.1%) |
| Benign cystic teratoma | 1 (0.1%) |
| Trichoepithelioma | 3 (0.3%) |
| Trichofolliculoma | 1 (0.1%) |
| Giant cell tumor | 1 (0.1%) |
| Ulcerative eosinophilic granuloma (Riga-Fede disease) | 1 (0.1%) |
| Verruca vulgaris | 1 (0.1%) |
| Warthin tumor (papillary lymphomatous cystadenoma) | 1 (0.1%) |
| No data | 5 (0.5%) |

*Table 3. Characteristics of cancer patients according to gender*

| | Male (N=636) | Female (N=369) | p-value |
|---|---|---|---|
| Age group (years): | | | 0.582 |
| 0-9 | 12 | 7 | |
| 10-19 | 15 | 15 | |
| 20-29 | 38 | 26 | |
| 30-39 | 42 | 21 | |
| 40-49 | 52 | 24 | |
| 50-59 | 108 | 52 | |
| 60-69 | 163 | 99 | |
| 70-79 | 133 | 84 | |
| 80-89 | 58 | 29 | |
| 90-99 | 5 | 6 | |
| No data | 10 | 6 | |
| Recurrence | 18 | 13 | 0.620 |
| Risk factors: | | | <0.001 |
| Sun exposure | 327 | 188 | |
| Tobacco | 40 | 15 | |
| Alcohol | 9 | 2 | |
| Viral infection | 3 | 1 | |
| Chemical materials | 1 | 3 | |
| Multiple factors | 158 | 47 | |
| No data | 98 | 113 | |
| Family history | 34 | 23 | 0.550 |
| Multi-site | 50 | 15 | 0.019 |

risk factors. Sun exposure was detected as a risk factor for cancer development in more than 50% of all cases. Kosovo as a geographic region has the Mediterranean climate with lots of sunny days annually. In addition, general perception of sunbathing is that sunlight is not harmful, therefore people do not avoid the mid-day summer sun. For this reason, it would be of great interest to evaluate the prevalence of skin cancer in the population. Most of the oral, neck and head cancers in the present study were located in the cheek region of the head/face, lower lip, nose and frontal region. The reasons apart from risk factors were not determined. We demonstrated that gender, age, sun exposure and tobacco use could statistically contribute to cancer in this region. Previous studies mostly diagnosed cancer on the tongue[17,19,22,28-30]. The reasons why the tongue and cheek were the predilection sites for oral cancer in

*Table 4. Distribution of cancers according to anatomic region and patient gender*

| Anatomic region | Number of patients (N=1005) | Percent of patients | Male (N=636) | Female (N=369) |
|---|---|---|---|---|
| Lower lip | 167 | 16.6% | 139 | 28 |
| Upper lip | 28 | 2.9% | 11 | 17 |
| Nose | 143 | 14.2% | 78 | 65 |
| Frontal region | 114 | 11.3% | 85 | 29 |
| Cheek region | 221 | 22.0% | 115 | 106 |
| Region covered with hair | 92 | 9.2% | 66 | 26 |
| Parotid gland | 6 | 0.6% | 1 | 5 |
| Palate | 5 | 0.5% | 4 | 1 |
| Medial canthus of eye | 10 | 1.0% | 6 | 4 |
| Lateral canthus of eye | 8 | 0.8% | 4 | 4 |
| Upper eyelid | 9 | 0.9% | 5 | 4 |
| Lower eyelid | 9 | 0.9% | 6 | 3 |
| Neck region | 40 | 4.0% | 23 | 16 |
| Oral mucosa | 10 | 1.0% | 4 | 6 |
| Tongue | 17 | 1.7% | 10 | 7 |
| Gingiva | 16 | 1.6% | 3 | 13 |
| Floor of the mouth | 0 | 0 | 0 | 0 |
| Ear | 27 | 2.7% | 22 | 5 |
| Other salivary glands | 1 | 0.1% | 0 | 1 |
| Upper jaw | 18 | 1.8% | 13 | 5 |
| Lower jaw | 9 | 0.9% | 7 | 2 |
| Frontal bone | 1 | 0.1% | 0 | 1 |
| No data | 54 | 5.3% | 34 | 81 |

those studies are that the carcinogens mixing with saliva in the oral cavity have a tendency to pool at the bottom of the mouth and these sites are covered by thin and non-keratinized mucosa, thus providing less protection against the carcinogen[31]. On the other hand, Chidzonga[32] reports on gingiva as the most common site of oral cancer, followed by the tongue. In our study, tongue and gingiva cancer together accounted for only 3.3% of all cancers. However, Howell *et al.*[33] report that the most common site of oral cancer in their study was the lip, followed by the tongue, which coincided with our findings regarding lip cancer. The explanation for the high incidence of lip cancer was sun exposure and ultraviolet light overexposure, which also coincided with our results. Australia, where the study was performed, also is a sunny country and its residents, mostly immigrants from Europe, have fair skin complexion and thus higher probability of skin damage. A study from India determined cancer of buccal mucosa as the second most common in their population, attributed to tobacco chewing[25]. As a consequence, alveolar mucosa, gingiva and buccal mucosa are constantly in contact with the carcinogens for a long period of time. In our analysis, tobacco was identified as a risk factor in 55 patients.

Regarding cancer subtypes in the present study, BCC accounted for 37.2% and SCC for 22.7% of all oral cancers. These figures are much lower than those reported in several previous studies, which found SCC to account for 84.4% to 90.0% of all oral cancers[2,19-20,29,33]. However, lower figures from 63.0% to 73.1% have also been reported[17,23,30,32], but not under 20% to 25%. Head and neck SCC has been established worldwide as one of the most frequent cancers. Its incidence is 2.5% and it annually contributes to 1.9% of all deaths from cancer. The majority of oral cancers are

*Table 5. Predictive values of risk factors with calculated HR with 95% CI for cancer in cheek region*

| | B | HR | 95% CI | | p-value |
|---|---|---|---|---|---|
| Gender | 0.404 | 1.497 | 1.146 | 1.965 | **0.003** |
| Age group (years): | | | | | |
| 0-9 | | Reference | | | |
| 10-19 | -1.078 | 0.340 | 0,062 | 1.858 | 0.213 |
| 20-29 | -0.932 | 0.394 | 0,098 | 1.577 | 0.188 |
| 30-39 | -0.443 | 0.642 | 0,213 | 1.940 | 0.433 |
| 40-49 | -0.442 | 0.643 | 0,209 | 1.976 | 0.440 |
| 50-59 | -0.013 | 0.987 | 0,342 | 2.846 | 0.980 |
| 60-69 | -1.232 | 0.292 | 0,099 | 0.859 | **0.025** |
| 70-79 | -0.425 | 0.654 | 0,237 | 1.804 | 0.412 |
| 80-89 | -0.425 | 0.654 | 0,236 | 1.811 | 0.414 |
| 90-99 | -0.210 | 0.810 | 0,28 | 2.343 | 0.698 |
| Occupation: | | | | | |
| Worker | | Reference | | | |
| Housewife | 0.543 | 1.722 | 0,951 | 3.115 | 0.073 |
| Retiree | 0.798 | 2.220 | 1,283 | 3.844 | **0.004** |
| Pupil | 0.575 | 1.778 | 1,116 | 2.832 | **0.015** |
| Student | 0.324 | 1.383 | 0,473 | 4.042 | 0.553 |
| Child <6 years | 0.997 | 2.710 | 1,240 | 5.923 | **0.012** |
| Field worker | 1.083 | 2.953 | 1,187 | 7.344 | **0.020** |
| Birthplace | -0.162 | 0.850 | 0.642 | 1.127 | 0.259 |
| Recurrence | -0.540 | 0.583 | 0.211 | 1.609 | 0.297 |
| Multi-site | -0.912 | 0.402 | 0.198 | 0.814 | **0.011** |
| Risk factors: | | | | | |
| Sun exposure | | Reference | | | |
| Tobacco | 0.539 | 1.714 | 1,118 | 2.627 | **0.013** |
| Alcohol | 0.141 | 1.151 | 0,472 | 2.810 | 0.757 |
| Various chemical materials | 1.051 | 2.861 | 0,387 | 21.169 | 0.303 |
| Multiple | 0.808 | 2.243 | 1,379 | 3.648 | **0.001** |
| Family history | -0.132 | 0.876 | 0.524 | 1.464 | 0.614 |

*Hazard ratios (HR) were calculated with Cox regression, where presence of cancer was dependent variable; B value was determined as correlation coefficient between independent and dependent variable; 95% CI = 95% confidence interval.

histologically SCC[34]. Head and neck SCC is normally detected in elderly people, but an increasing incidence among younger patients aged <45 has been observed in recent years. However, cancer in younger people is known to be a different clinical entity with different etiologic factors and pathogenesis. There is also a distinctive discrepancy in the estimated proportion of oral cancers in younger patients among different regions, e.g., North America (5.5%), Africa (17.2%) and Middle East (14.5%). Therefore, we need to conduct more population-based incidence studies also in non-Western regions to obtain a more accurate proportion of incidence in younger population, and also to identify the etiologic risk factors for the disease[35]. Interest-

ingly, in previous studies on the epithelial tumor category, SCC was the most common tumor and the most common oral cancer[17,19-27,29,32,33], while mucoepidermoid carcinoma was most prevalent in the salivary gland tumor category[17,20,27], whereas in our study it accounted for only 0.1% of all cancers. The prevalence data do differ among countries, however, mostly between the Western countries and third-world countries.

Basal cell carcinoma was proved to be the most frequent subtype in our study, and is also the most common malignancy in Caucasians[36-40], with over two million cases diagnosed in the USA each year[39]. It is believed that BCC originates from the basal layer of the epidermis, the interfollicular epidermis and the hair follicle[41]. Approximately 95% of individuals are diagnosed with BCC between the age of 40 and 79 years. The incidence is approximately 30% higher in men than in women. The risk factors include fair skin pigmentation, sun radiation (ultraviolet and/or ionizing), exposure to arsenic or polycyclic aromatic hydrocarbons, immunosuppression, scars, and certain genetic syndromes[41]. BCC frequently has benign evaluation despite the high rate of local recurrence. About 80% of BCCs are located in the head or neck. Several lines of evidence suggest that the worldwide incidence of BCC is increasing[42]. Metastatic BCC is extremely rare, with the incidence rates up to 0.5%. It is defined as a primary cutaneous BCC that spreads to distant sites as histologically similar metastatic deposits of BCC[43].

Patients with oral and maxillofacial tumors have a high risk of local recurrence, but the risk of distant recurrence is low[4]. Recurrence was found in only 31 (3.1%) of all included patients, with no data on the region cancer recurrence. For instance, Montero and Patel[4] report that the possibility of a second head and neck cancer is only 4%-7% *per* year because comprehensive clinical examinations and already a high suspicion in such cancer patients are the main reasons for early diagnosis and early detection.

The main strength of this study was its design. Although it was retrospective analysis of data, it was based on the method of population-based data, which were collected in a precise and rigorous manner from medical files in order to know all the characteristics of the cancer patients included in final analysis. Thus, despite some absent data from medical records, missing values were minor. The inclusion of patients from the cancer archive allowed us to overcome recruitment bias and gave us information on the totality of cancer cases in the given geographic area of Kosovo. The main limit of our study was the limited study area, since data were only obtained from one archive instead of multiple centres, and consequently a relatively small number of patients were included in the 3-year analysis. However, this study required an extended, standardized, dedicated registration, since in Kosovo we do not run cancer registries for collection and management of data from patients with oral, neck or head cancers. So, this was the first study of this kind conducted in Kosovo. Another limitation was design of the study, which did not assess all patient data and information. Time elapsed between diagnosis and treatment (time-to-treat) was investigated and showed considerable delay. It was generally long (median approximately 9 months, mean 22 months), however, we often could not identify the reason for this. Despite recommendations for early detection, cancers are still diagnosed rather late in Kosovo.

## Conclusions

Oral cancers significantly contribute to patient mortality and morbidity, especially when detected late in the course of disease. This study highlighted data on gender distribution of cancer and provided information on anatomic locations where oral cancers were frequently detected. Considering prevalence data, clinicians should pay attention to the cheek region, mucosa and lip for early detection of cancers, since these regions were most common in our study. This study also showed differences between age groups, where elderly had a much higher probability of oral cancers compared to younger patients.

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Sažetak

## ANALIZA TROGODIŠNJE UČESTALOSTI TUMORA USNE ŠUPLJINE, VRATA I GLAVE − RETROSPEKTIVNO ISTRAŽIVANJE U JEDNOM CENTRU

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Cilj ovoga istraživanja bio je analizirati učestalost tumora usne šupljine, vrata i glave u našoj klinici tijekom trogodišnjeg razdoblja. Retrospektivnom analizom obuhvaćeni su arhivski podaci za bolesnike s karcinomom liječene na našoj klinici od 2015. do 2017. godine. Za konačnu analizu odabrano je ukupno 1005 bolesnika s dokazanim karcinomom. Karcinomi su otkriveni ultrazvukom, rendgenskim snimanjem, biopsijom i kliničkom dijagnostikom. Srednja dob bolesnika bila je 58,4±19,3 godine. Većina slučajeva (n=264; 26,3%) otkrivena je u sedmom desetljeću života. Najčešći tipovi karcinoma bili su bazocelularni karcinom utvrđen u 374 (37,2%) i planocelularni karcinom u 228 (22,7%) slučajeva. Omjer muških i ženskih bolesnika bio je 1,7:1. Među spolovima nije bilo statistički značajne razlike u dobi. Ponovna pojava tumora zabilježena je u 31 bolesnika. Izlaganje suncu bio je najčešći čimbenik rizika u objema skupinama. Najčešća mjesta nastanka tumora bili su donja usnica, obrazi i frontalna regija kod muškaraca te područje obraza i nos kod žena (p<0,001). Vjerojatnost razvoja karcinoma bila je veća kod muškaraca. Studija je pokazala razlike među dobnim skupinama, tj. vjerojatnost razvoja karcinoma bila je znatno veća kod starijih bolesnika u usporedbi s mlađim bolesnicima.

Ključne riječi: *Trogodišnji podaci; Učestalost; Karcinomi usne šupljine; Čimbenici rizika; Retrospektivna analiza*