

Prevalence of Oral and Pharyngeal Cancers and the Relationship Between Tumour Size and Lymph Node Metastases in Oral Cancer.

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Abstract

Background: the study aimed at studying the incidence and prevalence rates of oral and pharyngeal cancer and their distribution according to gender, tumour size, histological type and chief complaint. We also tackled the relationship between the tumour size and the metastasis to the regional lymph nodes.

Materials and Methods: This cohort retrospective study was done in Al-Mouasat hospital from January 2017 to June 2020. The population included patients with oral or pharynx cancer who were admitted to the Ear, Nose, Throat department.

Results: The total participants were 96 cases. The median age was 57 year. The most common tumour location was oral tumour 58.3%, and the most common chief complaint about oral tumour was mass by 62.5%. while nasopharynx cases most commonly came with neck mass 68.2%. 50% was the percentage of dysphagia that was the most common complaint. Squamous cell carcinoma (SCC) was the most common histologic type < 90% of the oral, oropharynx, and hypopharynx cases. About the classification of the tumour due to its subsite 33.9% of the oral cases were in lip and especially the lower one. Whereas, oropharynx most frequent tumour site was the tonsil (50%). we found statistical evidence for the relationship between the tumour size (T) and the metastasis to the regional lymph node (N) in oral cancer.

Conclusion: Oral and pharyngeal cancer is a very important issue. And according to our paper, the most frequent cancer was oral cancer and especially lower lip tumour. oral cancer presents with mass. whereas, the nasopharyngeal cancer presentation was neck mas. The most common histological type was SCC. And we reached a relationship between the T and N in oral cancer

Introduction

In the last few years oral and pharyngeal cancer has been gaining importance increasingly, in Syria it doesn't have that much interest it needs especially with the growing number of cancer cases. Oral and pharyngeal cancer considered one of the most frequent tumours. Globally 657,000 new cases are appraised each year of oral and pharynx cancer, also more than 330,000 deaths reported annually.[1] In comparison with 2012, we can see the increased cases, 529,000 new cases and 292,300. [2] That's why it is very important to focus on and lighten this type of cancer and detect the known risk factor to avoid it, in addition to search for new relevant factor just to reduce the incidence of new cancer cases.[2]

There are too many known accused factors such as smoking or chewing tobacco in developed countries, alcoholism, food nitrosamine that is related to some areas that depend on salty food like salted fishes, some viruses are also responsible of or facilitate the ability to develop cancer or it has the carcinogenic power such as Human Papilloma Virus (HPV) and its relationship with the oral and oropharynx cancer especially type 16 and 18 of HPV. Meanwhile, Epstein-Barr virus (EBV) is identified as a carcinogenic factor for nasopharyngeal carcinoma. Lip cancer especially the lower one it has a physical risk factor that

is Ultraviolet (UV) this kind of cancer is widespread among countries and people who depend on agricultural crafts that's why they exposed to too much UV during their work. [2,3]

The tumour sites are the lips and oral cavity the pharynx and its sections (nasopharynx, oropharynx, and hypopharynx). Their frequency varies between the geographic site for the oral cavity section such as oral tongue, mouth floor or even buccal mucosa also it depends on the triggering factor.[4]

The chief complaint fluctuates according to the tumour site. For example, the most common lips complaint is ulcerative or exophytic mass. Moreover, some precancerous condition could be assessed by the dentist like erythroplakia or less like leukoplakia and the relation between these issues and oral tongue cancer. One of the symptoms that too much time get thrifless is the neck mass but it is a very correlated phenomenon with nasopharynx cancer. Sometimes the only symptom could be recognized after it gets spread and gave far metastases. [5,6]

The most common histologic type in oral and pharyngeal cancer is squamous cell carcinoma and its ratio differs between the tumour anatomical site, it is the 8th most common cancer in oral male cancers and the 5th most common oral cancer for females. as well as other histologic types shouldn't be ignored such as lymphoma, adenoid cystic carcinoma, sarcomas. The staging is depending on the histologic findings like tumour size, node manifestation, and if there any far or wide metastases. [4,7]

Materials And Methods

A retrospective cohort study which was carried out between January 2017 to the end of June 2020 consisted of 96 patients who were admitted to the ENT department of Al-Mouassat University Hospital.

The inclusion criteria were all patients diagnosed with malignant oral or pharyngeal tumours confirmed with histopathological findings, while exclusion criteria comprised benign tumours, uncompleted specimens or patients who did not give consent to participate in the study.

Depending on the hospital's clinical records, the data was collected using a questionnaire that targeted first the demographic information and the patients' habits in addition to their medical, surgical and allergic history. In the second part of the questionnaire, detailed information about the tumour including its location, type, histological features and clinical staging was collected. The chief complaints, symptoms and treatment plan were also eventually obtained. It's worth to mention that the AJCC 7th edition was used to clinical-stage the tumours.

Statistical analysis

To analyze the data, the 25th edition of SPSS was used with P-value less than 0.05 considered statistically significant.

The consent of the ethics committee of the Syrian Private University and the ENT department of Al Mouassat University Hospital was granted to gain access to patients' data.

Two types of statistics were used in the study: Descriptive and Quantitative analysis.

A chi-square test to study the distribution of the different variables of the sample was used.

Results

Out of the 96 cases diagnosed with oral or pharyngeal cancer in our study, (64.6%) were males, whereas females comprised (35.4%). When it comes to the relative distribution which refers to the relationship between the gender and the tumour location, we found out that the male gender is dominant in all tumour locations except the hypopharynx where the females were most recurrent (75%) see (Table 1). The mean age was 57 years old. The most common tumour location was oral by (58.3%), then Nasopharynx, Oropharynx, Hypopharynx by (22.9%, 14.6%, 4.2%) respectively.

in regards to the chief complaints in oral cancer, oral mass followed by the ulcer were the most frequent complaints (62.5%, 26.7%) respectively.

Furthermore, the most common chief complaint in nasopharynx cases was neck mass (68.2%), compared to Dysphagia in both of oropharynx and hypopharynx by (50%) each. All the additional chief complaints encountered are shown in (Table 2).

Smoker patients in the oral tumour represented (55.3%) of the total sample. Moreover, smokers with nasopharyngeal or hypopharyngeal cancer were 50%. Lastly, (71.4%) of oropharyngeal tumour individuals were smokers.

(50%) of the patients with oral cancer showed an extra complaint which was mainly weight loss with (39.2%) followed by reflex otalgia with (35.7%). Moreover, (68.2%) of the symptomatic nasopharyngeal cancer had reflex otalgia, night sweat and rhinorrhea as extra complaints with (13.3%) each. In the group of oropharyngeal cancer, (78.5%) of patients showed reflex otalgia and weight loss with (45.4%). Lastly, hypopharyngeal cancer patients demonstrated weight loss as a main extra complaint with (75%).

concerning tumour location of the sample studied we found out:

- Oral tumour: the lower lip tumour was the most encountered by (33.9%) followed by the oral tongue (28.6%), Hard palate (10.7%), Buccal mucosa (10.7%), Retromolar trigone (7.1%), Mouth floor (5.4%), Alveolar ridge (1.8%) and upper lip (1.8%) respectively.
- Oropharynx: tonsil was the most frequent site (50%), then Tongue base (35.7%), Soft palate (7.1%) and Lateral pharyngeal wall (7.1%) respectively.
- Hypopharynx: Post-cricoid region (50%), Piriform sinus (25%) and Posterior pharyngeal wall (25%).
- 90% of Nasopharynx tumours were in the Rosenmuller fossa.

The most common histological type in all previously mentioned tumour was Squamous cell carcinoma (SCC) by (92.9%) for oral tumour, (90.9%) for Nasopharynx, (85.7%) in regards to the oropharynx, and all

the hypopharynx tumour were SCC. Other histologic manifestations including adenoid cystic carcinoma, lymphoma, rhabdomyosarcoma and Adenosquamous cell carcinoma with their percentage are shown in (table 3).

The TNM classification for SCC diagnosed cases:

Patients with SCC of oral cancer, (40.4%) of the total were considered as T2, while both T1 and T4a were (19.2%), T3 (17.3%), and finally T4b (3.8%).

on the other hand, Nasopharynx statistics showed T2 (70%), whereas T1 was (25%), and the less common was T3 by (5%).

about oropharynx data showed T2 and T4a as the most common (41.7% each), in addition to T1 and T3 as the less common (8.3% each).

finally, hypopharynx T1 (50%), T2 and T4a were (25% each).

The metastases to the cervical lymph nodes in the oral tumour were N0 (40.1%), N2c (25%), N1 (23.1%), N2a (5.8%), N3 (3.8%), N2b (1.9%). While nasopharynx statistics showed (52.6%) for N1, N2a (26.3%), N0 and N3 (10.5% each). Whereas the node classification for the oropharynx was (25%) for each of N0, N1 and N3. On the other hand, N2c was (16.7%), N2a (8.3%). Finally, the hypopharynx tumour node classified as (25%) for each of N0, N1, N2a and N2c.

The distant metastases are shown in (Table 4).

Statistical inference:

We used the chi-square test to study the relationship between the clinical staging of the tumour and the metastases to the cervical lymph nodes. Based on that we concluded that there is a statistically significant association between T and N in the oral tumour, while this association was not found in the other tumour locations. All the data are shown in (table 5).

Discussion

In our study, oral and pharyngeal cancer as one block, the cancer was more common in males with (64.6%) which is similar to the results reported by Kevin D. Shield et al. speaking of (70.8%) of tumors in males.[2] and a study done in Spain with male's ratio of (68.9%) [8]. Whereas by distributing the participant tumour location each one to its anatomical site we found that Kevin D. Shield et al. [2] and Maleki, Ghojazadeh, Mahmoudi, et al [10] observed that the males in general are the most common patients in all oral and pharynx cancer types. while according to our results, the females are more predominant with hypopharynx specifically. That lead us to focus on these finding and know the cause of why hypopharynx cancer is more common among females in our society. Is it the lack of women health

care? Additionally, the Plummer-Vinson Syndrome should not be forgotten considering that the anemia is common and important issue does not get enough care and follow up.

The Results of this study showed that the median age was 57, while rendering to Dirven et al. [9] the median age was 63.9 in a study that consisted of 435 participants.

The most common tumour location in our study was oral tumour by (58.3%). then nasopharynx, oropharynx and hypopharynx respectively. Whereas Kevin D. Shield et al. [2] reported another order for the pharynx tumour. The oral was the most common, followed by oropharynx as the second most seen then nasopharynx and hypopharynx respectively.

The most common chief complaint about the oral tumour regarding C Kerwala TR, J-P Jeannon, et al. [6] a study had been done in the UK was the ulcerative mass by (95%) combining with the mass complaint, while our statistics show that both mass and ulcer give a percentage of (89%) of cases.

In a review study of Bernadette Brennan [11], the most common chief complaint in nasopharynx cases was neck mass that matches with our findings of the previous issue.

Garneau et al. [12] and our study found that the main complaint in hypopharynx tumour is dysphagia.

The most common histologic type in our study was SCC that goes with too many studies. [5,7,8,13]. On the other hand, the second most common type was adenoid cystic carcinoma in our study and a similar article [8].

In the Oral tumour, the most reviewed tumour was lower lip cancer by (33.9%) regarding our results. Then oral tongue and buccal mucosa respectively. This finding doesn't accordant with a study that occurred in India.[13] The study shows that the most common site is buccal mucosa by (32%). While considering to a study take a place in Spain showed that the most common site is mouth floor cancer.[8] Lastly, a review from Iran [10] found that the most frequent tumour site is the oral tongue.

The smoker patients with oral tumour were (55.3%) in our study. In comparison with a similar study, the smokers with oral tumour were (57,7%) [8].

Wittekindt C, Klussmann JP [14] mentioned that the metastases ratio to the lymph node in cases with hypopharynx carcinoma was (71.5%). whereas in our study was (75%) of the totals.

The main limitation of this study of our study was the COVID-19 pandemic and the difficulty to reach the hospital archive. Also, what considered as a big obstacle that there are no HPV detection criteria in our country for the cases that the HPV could be the cause or it has any role with cancer development because of its cost and its difficulty.

Conclusion

Oral and pharyngeal cancer is a very important issue. Therefore, we wanted to focus on these tumours. And distinguish its prevalence among our country. We need more researches to enhance awareness about cancer.

According to our article, the most prevalent cancer was oral cancer and especially lower lip tumour. oral cancer presents with mass. whereas, the nasopharyngeal cancer presentation was neck mas. The most common histological type was SCC. And we reached a relationship between the T and N in oral cancer.

Abbreviations

SCC: squamous cell carcinoma

HPV: Human Papilloma Virus

AJCC: American Joint Committee on cancer

UV: ultraviolet

EBV: Epstein-Barr virus

Declarations

Ethics approval and consent to participate:

All the patients who admitted to the ENT Department gave a written consent and know that their medical information could be a part of clinical study.

The ethical approval also took from the faculty of medicine Syrian Private University, the faculty of medicine Damascus University, and the ENT Department head.

Consent for publication:

Not applicable

Availability of data and materials:

All data generated or analysed during this study are included in this published article, and for any additional information they are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

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Authors' contributions:

All the authors participate in data collection and writing the manuscript, also helping in statistical issues and the revision of the paper

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Tables

Table 1. Participants gender according to the tumour location.

| Table 1 | | N | % |
|-------------|--------|----|------|
| Oral | male | 33 | 58.9 |
| | female | 23 | 41.1 |
| | Total | 56 | 100 |
| Nasopharynx | male | 16 | 72.7 |
| | female | 6 | 27.3 |
| | Total | 22 | 100 |
| Oropharynx | male | 12 | 85.7 |
| | female | 2 | 14.3 |
| | Total | 14 | 100 |
| Hypopharynx | male | 1 | 25.0 |
| | female | 3 | 75.0 |
| | Total | 4 | 100 |

Table 2. The chief complaint distribution according to the tumour site.

| Table 2 | | N | % |
|-------------|---------------------------|----|------|
| Oral | Mass | 35 | 62.5 |
| | Ulcer | 15 | 26.7 |
| | Oral pain | 4 | 7.1 |
| | Dysphagia | 1 | 1.8 |
| | Headache | 1 | 1.8 |
| | Total | 56 | 100 |
| Nasopharynx | Neck mass | 15 | 68.2 |
| | Bilateral nasal block | 2 | 9.1 |
| | Exophthalmos | 1 | 4.5 |
| | Hearing loss | 1 | 4.5 |
| | Headache | 1 | 4.5 |
| | Unilateral nasal blockage | 1 | 4.5 |
| | Hemoptysis | 1 | 4.5 |
| | Total | 22 | 100 |
| Oropharynx | Dysphagia | 7 | 50.0 |
| | Sore throat | 2 | 14.3 |
| | Neck mass | 1 | 7.1 |
| | Oral mass | 1 | 7.1 |
| | Soft palate mass | 1 | 7.1 |
| | Voice quality changes | 1 | 7.1 |
| | Dyspnea | 1 | 7.1 |
| | Total | 14 | 100 |
| Hypopharynx | Dysphagia | 2 | 50.0 |
| | Neck mass | 1 | 25.0 |
| | Voice quality changes | 1 | 25.0 |
| | Total | 4 | 100 |

Table 3. The histopathological finding according to the tumour location.

| Table 3 | | N | % |
|-------------|--------------------------------|----|------|
| Oral | SCC | 52 | 92.9 |
| | Adenoid cystic | 2 | 3.6 |
| | Adenosquamous cell carcinoma | 1 | 1.8 |
| | Malignant hemangioendothelioma | 1 | 1.8 |
| | Total | 56 | 100 |
| Nasopharynx | SCC | 20 | 90.9 |
| | Lymphoma | 2 | 9.1 |
| | Total | 22 | 100 |
| Oropharynx | SCC | 12 | 85.7 |
| | Lymphoma | 1 | 7.1 |
| | Rhabdomyosarcoma | 1 | 7.1 |
| | Total | 14 | 100 |
| Hypopharynx | SCC | 4 | 100 |

Table 4. The distant metastases according to the tumour location.

| Table 4 | | N | % |
|-------------|---------|----|------|
| Oral | Not SCC | 4 | 7.1 |
| | Mx | 44 | 78.6 |
| | Mo | 7 | 12.5 |
| | M1 | 1 | 1.8 |
| | Total | 56 | 100 |
| Nasopharynx | Mx | 20 | 90.9 |
| | Mo | 2 | 9.1 |
| | Total | 22 | 100 |
| Oropharynx | Mx | 12 | 85.7 |
| | Mo | 2 | 14.3 |
| | Total | 14 | 100 |
| Hypopharynx | Mx | 3 | 75.0 |
| | Mo | 1 | 25.0 |
| | Total | 4 | 100 |

Table 5. The relationship between the tumour location and the regional lymph node

| Table 5 | | | N | | | | | | Total | Chi-Square test | |
|-------------|---|-------|----|----|-----|-----|-----|----|-------|-----------------|---------|
| | | | N0 | N1 | N2a | N2b | N2c | N3 | | Chi-Square | p-value |
| Oral | T | T1 | 7 | 1 | 0 | 0 | 2 | 0 | 10 | 37.508 | 0.010 |
| | | T2 | 10 | 8 | 0 | 0 | 3 | 0 | 21 | | |
| | | T3 | 1 | 3 | 2 | 1 | 2 | 0 | 9 | | |
| | | T4a | 3 | 0 | 1 | 0 | 4 | 2 | 10 | | |
| | | T4b | 0 | 0 | 0 | 0 | 2 | 0 | 2 | | |
| | | Total | 21 | 12 | 3 | 1 | 13 | 2 | 52 | | |
| Nasopharynx | T | T1 | 0 | 4 | 1 | | | 0 | 5 | 5.378 | 0.496 |
| | | T2 | 2 | 6 | 3 | | | 2 | 13 | | |
| | | T3 | 0 | 0 | 1 | | | 0 | 1 | | |
| | | Total | 2 | 10 | 5 | | | 2 | 19 | | |
| Oropharynx | T | T1 | 1 | 0 | 0 | | 0 | 0 | 1 | 12.000 | 0.446 |
| | | T2 | 1 | 2 | 0 | | 0 | 2 | 5 | | |
| | | T3 | 0 | 1 | 0 | | 0 | 0 | 1 | | |
| | | T4a | 1 | 0 | 1 | | 2 | 1 | 5 | | |
| | | Total | 3 | 3 | 1 | | 2 | 3 | 12 | | |
| Hypopharynx | T | T1 | 1 | 1 | 0 | | 0 | | 2 | 8.000 | 0.238 |
| | | T3 | 0 | 0 | 0 | | 1 | | 1 | | |
| | | T4a | 0 | 0 | 1 | | 0 | | 1 | | |
| | | Total | 1 | 1 | 1 | | 1 | | 4 | | |