Clinics of Oncology

Research Article ISSN: 2640-1037 | Volume 8

Demographic Profile of Benign and Malignant Oral Tumors in Sana'a City Yemen: A Retrospective Study

Monya Abdullah Yahya El-Zine[1], Khaled Abdulkarim Al-Moyed[2], Maged Ali Amer Ali[4], Khaled A AL-Haddad[5], Hassan Abdulwahab Al-Shamah [2,3*], and Omar Ahmed Ismael Al-dossary[2,3]

[1]Department of Histopathology, Faculty of Medicine and Health Sciences, Sana'a University, Republic of Yemen

[2]Medical Microbiology department, Faculty of Medicine and Health Sciences, Sana'a University, Republic of Yemen

[3]Department of Basic Sciences, Faculty of Dentistry, Sana'a University, Republic of Yemen

[4]Department of Neurosurgery, Faculty of Medicine and Health Sciences, Sana'a University, Republic of Yemen

[5]Orthodontics, Pedodontics and Prevention Department Faculty of Dentistry, Sana'a University, Yemen

[*]Corresponding author:

Hassan A Al-Shamahy,
Medical Microbiology department, Faculty of Medicine and Health Sciences, Sana'a University, Republic of Yemen and Department of Basic Sciences, Faculty of Dentistry, Sana'a University, Republic of Yemen

Received: 26 Sep 2024
Accepted: 16 Oct 2024
Published: 21 Oct 2024
J Short Name: COO

Copyright:

©2024 Hassan A Al-Shamahy, This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and build upon your work non-commercially.

Keywords:

Associated factors; Benign oral tumors; Malignant oral tumors; Prevalence; Odds ratio; Yemen

Citation:

Hassan A Al-Shamahy, Demographic Profile of Benign and Malignant Oral Tumors in Sana'a City Yemen: A Retrospective Study. Clin Onco. 2024; 8(3): 1-6

1. Abstract

1.1. Background and Aims

Oral malignancy is endemic in Yemen due to high addiction to tobacco and Qat cheewing. In addition, benign oral tumors are also very common in Yemen, while studies comparing the demographic profile of benign and malignant oral tumors are scarce in Yemen. So the aim of this study was to determine the rates of different oral tumors, rate of malignancy, and association of malignant tumors with sex and age groups. Material and Methods: This retrospective cross-sectional study was conducted on all patients diagnosed with oral cancers in the targeted centers in Sana'a city (the National Public Health Laboratories, Al-Mamoun Center, and Al-Awlaki Laboratory Centers) from June 2020 to June 2022. This study is based on data taken from patient files that include age, gender, and final diagnosis.

1.2. Results

The most common types of oral cancer were squamous cell carcinoma (33.6%), ameloblastoma (12.4%), odontogenic fibroma (5.2%), pleomorphic adenoma (4.5%), and spindle cell tumor (3.3%). The total benign tumors were 188 (57%), while the total malignant tumors were 142 (43%). The incidence of malignancy was 65.5% among male patients, while it was only 34.5% among female patients. The incidence of oral malignancy increased with age, with the peak occurring in the age group 41-50 years (36.6%). The age group with the highest malignancy was 41–50 years, with a significant association between malignancy and age >50 years.

1.3. Conclusion

Oral cancer is prevalent in male patients, with a higher incidence of malignancy in male patients. The most common types include squamous cell carcinoma, ameloblastoma, odontogenic fibroma, pleomorphic adenoma, and spindle cell tumor. The highest malignancy is associated with patients aged 41–50 years.

2. Introduction

There is a wide range of benign and malignant lesions among the abnormal growths that can be observed in the oral cavity [1]. Reactive lesions and tumor formation are predisposed by malposition, mechanical irritation, smoking, chewing tobacco and qat, poor oral hygiene, detachable dentures, and malposition. Although clinical and radiographic signs are used to establish the diagnosis of oral cavity lesions, a histological investigation of the lesion serves as the basis for the final diagnosis [2]. The mouth cavity is home to a broad range of benign malignancies. They often have high lev-

els of cellular differentiation, little mitosis, and slow growth. They never spread, and recurrence is uncommon. Benign tumors of the oral cavity can cause significant loss of soft tissue and/or bone, even if they are not life-threatening [2]. Fibromas and odontogenic tumors are the most prevalent types of benign tumors. Because it might be challenging to distinguish benign from malignant tumors clinically, histological confirmation is necessary. In addition, numerous patients face the risk of malignant degeneration, repeated surgical treatments, and the potential of recurrence [3, 4]. It is well recognized that oral cancer is a varied group of cancers that can originate in various oral cavity regions. Its prevalence, treatment outcomes, and predisposing factors are all distinct. It has an annual incidence of over 300,000 cases, making it the sixth most prevalent cancer reported worldwide, with 62% of cases occurring in poor nations [5]. Oral cavity cancer accounts for about 30% of all cancers in underdeveloped nations, but it only makes up about 3% of cancers in the US population [5]. The frequency of oral cancer varies significantly throughout different parts of the world. Age-adjusted rates range from more than 20 per 100,000 people in India to less than two per 100,000 people in the Middle East and 10 per 100,000 people in the United States [5, 6]. Regional variations in risk factor prevalence can be used to explain variations in mouth cancer incidence and pattern. Similar to this, there is significant regional heterogeneity in the demographics of benign oral tumors around the globe [7]. Yemen has a high prevalence of oral cancer because of tobacco addiction (Al-Shamah, particularly in men) and qat chewing (particularly in adult males and females) [8]. Together with malignant tumors, benign tumors (such as fibromas and odontogenic tumors) are important in Yemen and share comparable risk factors with malignant lesions [9]. because these tumors are not common in Yemen, regional epidemiological research is required. For a variety of reasons, it is crucial to have comprehensive and descriptive oral tumor data for every single geographic area. To assess and estimate the allocation of resources for research, prevention, treatment, and support services, it is helpful to comprehend the scope of the issue, identify the population groups that are most and least at risk, and compare the burden of the oral tumor to that of other tumors. The National Information Center Library's archives in Yemen show that numerous studies have been carried out on cancers in Yemen. These studies include the correlation between the Epstein-Barr virus and bladder cancer [11], renal tumors [12], tumors and histological recognition in the operated patients [15], and the prevalence of parotid tumors [13]. However, no study has looked into the prevalence of oral tumors and how they relate to sex and age in Yemeni society. Thus, the purpose of this study was to look at the prevalence of various oral cancer kinds and related variables including age and sex.

3. Materials and Methods

3.1. Study Design: A Retrospective Study

Study Population: During the study period (June 2020–June 2022), all case reports of patients with oral tumors (reports of biopsies) at the National Public Health Laboratories, Al-Mamoon Center, and Al-Awlaqy Lab Centers in Sana'a city. These labs were chosen because they were thought to be Yemen's primary labs, which is where the majority of pathological lesion biopsies were sent.

Study Site: This study was carried out in Sana'a city.

Sample Size: 330 case reports of oral tumors were found, 29 of which were ameloblastomas.

Inclusion criteria: All biopsy reports of cases diagnosed as oral tumors; all biopsy reports with complete data, including age, gender, anatomical location, and histopathological pattern; all biopsy reports received during the period of the study (June 2020-June 2022).

Exclusion Criteria: All biopsy reports that did not meet the study's inclusion criteria, all biopsy reports of patients diagnosed with conditions other than oral tumors, and all biopsy reports that were not received between June 2020 and June 2022.

Data Collection: Every biopsy report that satisfied the requirements for inclusion was gathered. Age, gender, anatomical location, and histological pattern were among the information gathered and recorded in a data sheet, also known as a case sheet. A methodological documentation was intended to be included in the data collecting sheet.

Statistical Method: The data were analyzed using appropriate descriptive statistics. All statistical analyses of the data were performed using Epi-info version 7. After data collection, they were entered into Epi-info for analysis. The data were described in terms of numbers and percentages. Non-parametric quantitative data were described using median, while parametric data were described in terms of mean and standard deviation. The odds ratio associated with the confidence limits for malignancy was performed through a 2x2 table; its significance was performed by calculating chi-square and p-value. The significance threshold was fixed at 5% level. When $p \leq 0.05$, the results were considered statistically significant.

Ethical Approval: Ethical approval was obtained from the Medical Ethics Committee of the Faculty of Medicine and Health Sciences, Dentistry, Sana'a University. All data, including patient identification, were kept confidential.

4. Results

The most prevalent tumors were squamous cell carcinoma (SCC) (33.6%) ameloblastoma (AB) (12.4%), odontogenic fibroma (5.2%), pleomorphic adenoma (4.5%) and spindle cell tumar (3.3%). The total benign tumors counted 188 (57%) and total malignant tumors counted 142 (43%) of the total cases (Table 1). The incidence of malignancy was 65.5% among male patients, while it was only 34.5% among female patients (Table 2). Considering

the association of malignancy with sex, there was an association between malignancy and male patients with an odds ratio of 1.8, 95% CI 1.1-2.7, with X2 of 5.4 and p = 0.01, while there was no association among female patients (Table 2). The incidence of oral malignancy among the age group 1-10 years was 0%, the age group 11-20 years was 1.4%, increased to 14.8% in the age group 21-30 years, then increased to 17.6% in the age group 31-40 years, and the peak of malignancy was in the age group 41-50 years (36.6%) followed by 29.6% for the age group >50 years (Table 3). Considering the association of malignancy with age groups, there was an association between malignancy and the age group 41-50 years with a significant odds ratio of 6.7, 95% CI 3.5- 12.4, with X2 of 41 and p < 0.0001. There was also a significant association between malignancy and age >50 years with a significant odds ratio of 9.5, 95% confidence interval (CI) 4.3-20.9, X2 40.3 and p <0.0001 (Table 3).

Table 1: Distribution of different oral tumors among Yemeni population attending to the main pathological diagnostic laboratory.

Tumor types	**N**	**%**
Squamous cell carcinoma (SCC)*	111	33.6
Lymphoma	41	12.4
Ameloblastoma **(**AB)	29	8.8
Odontogenic Fibroma	17	5.2
Pleomorphic adenoma	15	4.5
Spindle cell tumar	11	3.3
Giant cell grannloma	8	2.4
Round cell tumor	8	2.4
Fibro osseons	8	2.4
Malignant undifferentiated tumor	8	2.4
Pyogenic Granuloma	7	2.1
Verrucons carcinoma *	7	2.1
Adenoid cystic carcinoma*	7	2.1
Basal cell carcinoma*	7	2.1
Fibro myxomatous tumor	5	1.5
Lipoma	5	1.5
Papilloma	5	1.5
Capillary hemangioma benigh	5	1.5
Lymphangioma	5	1.5
Cemento-ossifying fibroma	4	1.2
Mucoepidermoid carcinoma*	4	1.2
Odontogenic Myxoma	3	0.9
Wing sarcoma*	3	0.9
Osteosarcoma*	2	0.6
Osteoma	2	0.6
Warthing tumor	1	0.3
Paraganglioma	1	0.3
Clear cell odontogenic carcinoma*	1	0.3
Total benign tumors	188	57
Total malignant tumors	142	43
Total patients	**330**	**100%**

Table 2: Association of malignant tumors with gender.

Gender	**Benign n=188 N (%)**	**Malignant n=142 N (%)**	***OR***	***CI 95%***	X^2	***p***
Male	99 (53)	93 (65.5)	1.8	1.1-2.7	5.4	0.01
Female	89 (47)	49 (34.5)	0.5	0.3-0.9	5.4	0.01
Total	188 (57)	142 (43)	-	-	-	-

Table 3: Association of malignant tumors with age groups.

Gender	Benign n=188 N (%)	Malignant n=142 N (%)	*OR*	*CI* 95%	X^2	p
1 - 10 years	2 (1.1)	0 (0)	0.0	Indefined	2.8	0.09
11 - 20 years	17 (9)	2 (1.4)	0.14	0.03-0.6	8.6	0.003
21 - 30 years	89 (47.3)	21 (14.8)	0.19	0.11-0.33	38	<0.0001
31 - 40 years	59 (31.4)	25 (17.6)	0.4	0.2-0.7	8	0.004
41 - 50 years	15 (8)	52 (36.6)	6.7	3.5-12.4	41	<0.0001
More than 50 years	8 (4.3)	42 (29.6)	9.5	4.3-=20.9	40.3	<0.0001
Total	**188 (57)**	**142 (43)**				

5. Discussion

According to our research, 43% of Yemen's solid oral tumors are malignant, with squamous cell carcinoma being the most prevalent type. The peak age of these malignant tumors was between 40 and 50 years old, whereas patients under 40 have roughly 32% of the malignancies. Fibromas of all kinds and odontogenic tumors are the most prevalent types of benign mouth tumors. Benign tumors often appear in the second or third decade of life, which is a younger age than that of malignant tumors. The gender distribution results demonstrated a statistically significant difference between benign and malignant tumors in terms of gender distribution, with a higher incidence of malignant tumors observed in individuals who were males. An unsettlingly high percentage of malignant oral neoplasms (43%), according to the current study, was discovered. This is a higher prevalence than the 37% from North India that was reported [2]. Even so, the results of the current study are not as high as those from Saudi Arabia, where 58% of oral cancers were malignant [15]. Therefore, even though the incidence of cancer in individuals with oral neoplasms varies greatly worldwide based on geographic location. Yemeni people are known to be at risk for oral cancer due to their usage of tobacco products (snuff, cigarettes, shisha, etc.); chewing qat; and having precancerous conditions. Viral infections, particularly the highly oncogenic human papillomavirus (HPV), are additional contributing or predisposing factors [16]. Squamous cell carcinoma accounted for 78.2% of all oral malignancies in the current study, making it the most common malignant tumor. This conclusion is consistent with the majority of other research from Saudi Arabia and India, which similarly state that the most common malignant lesions found in the mouth are squamous cell carcinomas [2,15,17]. Also, in our investigation, verrucous carcinoma was discovered to be a less common malignant tumor (2.1%). This finding differs from the majority of previous research, which likewise state that squamous cell carcinoma is the most common malignant lesion in the mouth, with verrucous carcinoma coming in second [2,15,17]. In the current investigation, 57% of the solid oral neoplasms were benign tumors. comparable to earlier research from Saudi Arabia and India [2,15,17]. Additionally, our investigation revealed that the most prevalent benign tumors were ameloblastoma (AB) and odontogenic fibroma, accounting for 8.8% and 5.2% of all tumors and 15% and 9% of begnin tumors, respectively. Odontogenic Fibroma fibroma is formed by the growth of collagen fibers and fibroma [18]. True fibroma is uncommon and most occurrences of fibroma are the result of fibrous hyperplasia progressing as a result of ongoing irritation [18, 19]. A gingival fibroma with patches of calcification or ossification is known as a peripheral ossifying fibroma [20]. Some peripheral ossifying fibromas are believed to originate from pyogenic granuloma (2.1% in the current study), which experiences fibrous maturation and subsequent calcification [20], due to its clinical and histological similarity. The third type of oral tumor was called an odontogenic fibroma. These tumors are a small but varied group of lesions that develop from the tissues involved in the development of teeth. Ameloblastoma was the most frequent odontogenic tumor in our study. Ameloblastoma has been identified as the most common odontogenic tumor in series on odontogenic tumors from Saudi Arabia and India [2,15,17,21, 22]. Our study's analysis of the gender distribution between malignant and benign oral neoplasms revealed that, while gender predilection for benign tumors was about the same (1.1:1), it was slightly higher for men in the case of malignant tumors (1.9:1).This outcome is comparable to what Alotaibi [15] and Ghai S, Sharma Y [2] have reported. Nonetheless, Manjunatha et al. [23] discovered in their investigation that, of all benign neoplasms examined, 69% were identified in females and 31% in males, indicating a preference for females. When Torres-Domingo et al. [18] examined benign lesions of the oral mucosa, they likewise discovered a higher incidence in females than in males (2:1). Women were more likely to develop benign lesions such as fibromas, pyogenic granulomas, and giant cell granulomas [18]. More males than females were identified in other investigations on malignant tumors. Researchers studying the demographics of oral cancer, Sharma et al. [24] from Western Uttar Pradesh and Ganesh et al. [25] from Tamil Nadu, found that

squamous cell carcinoma was more common in men, with ratios of 2.2:1 and 2.1:1, respectively. The male-to-female balance was much larger (4.18:1), according to Shenoi et al. from Nagpur in India [26]. This discrepancy in distribution can be linked to male addiction to tobacco and betel nut intake being higher in India than in female addiction. In Yemen, smoking is also viewed as socially inappropriate for women, yet this is gradually changing, and the prevalence of oral cancer is rising among women.

In the current study, the incidence of oral malignancy among the age group 1-10 years was 0%, the age group 11-20 years was 1.4%, increased to 14.8% in the age group 21-30 years, then increased to 17.6% in the age group 31-40 years, and the peak of malignancy was in the age group 41-50 years (36.6%) followed by 29.6% for the age group >50 years. According to Shamim et al. [27], the age groups of 10–19 years old had the highest incidence of benign tumors (18.2%), followed by 40–49 years old (15.9%) and 50–59 years old (15.9%). They discovered that the age range of 40 to 49 accounted for the majority of patients with oral cancer. In a different study, individuals between the ages of 10 and 39 showed benign lesions, while those between the ages of 50 and 69 showed malignant lesions [28]. The fourth and fifth decades are when oral cancer incidence peaks, according to a study done on the people in western Uttar Pradesh in India [24]. Our study's concerning conclusion was that roughly 35% of malignant tumors occurred in people under 40. We also mapped the geographic distribution of benign and malignant tumors and raised awareness among the public and dental community to lower the incidence of oral cancer in Yemen. The article's primary clinical significance lies in raising awareness among Yemeni dentists and otolaryngologists about the prevalence of malignant neoplasms in patients under 40 years of age. If a growth is detected, a high index of suspicion for malignancy should be maintained.

5. Conclusion

In conclusion, in central Yemen, which is endemic for oral cancer, 43% of all neoplasms of the oral cavity are malignant and 57% are benign. Almost one-third of malignant tumors occur in patients younger than 40 years of age. The high frequency of younger patients developing oral cancer calls for urgent measures to spread awareness about oral cancer and its causative factors in Yemen.

References

1. Błochowiak K, Farynowska J, Sokalski J, Wyganowska-Świątkowska M, Witmanowski H. Benign tumours and tumour-like lesions in the oral cavity: a retrospective analysis. Postepy Dermatol Alergol. 2019; 36: 744-51.
2. Ghai S, Sharma Y. Demographic Profile of Benign and Malignant Oral Tumors in Central India: A Retrospective Comparative Study. Cureus. 2022; 14(5): e25345.
3. Chrcanovic BR, Gomez RS. Recurrence probability for keratocystic odontogenic tumors: an analysis of 6427 cases. J Craniomaxillofac Surg. 2017; 45: 244-51.
4. Tabrizi R, Hosseini Kordkheili MR, Jafarian M, Aghdashi F. Decompression or marsupialization; which conservative treatment is associated with low recurrence rate in keratocystic odontogenic tumors? A systematic review. J Dent (Shiraz). 2019; 20: 145-51.
5. Coelho KR. Challenges of the oral cancer burden in India. J Cancer Epidemiol. 2012; 2012: 701932.
6. Sankaranarayanan R, Masuyer E, Swaminathan R, Ferlay J, Whelan S. Head and neck cancer: a global perspective on epidemiology and prognosis. Anticancer Res. 1998; 18: 4779-86.
7. Tranby EP, Heaton LJ, Tomar SL, Kelly AL, Fager GL. Oral Cancer Prevalence, Mortality, and Costs in Medicaid and Commercial Insurance Claims Data. Cancer Epidemiol Biomarkers Prev. 2022; 31(9): 1849-1857.
8. Yitayih Y. Khat Use in Defined Population, in Handbook of Substance Misuse and Addictions: From Biology to Public Health, V.B. Patel and V.R. Preedy, Editors. 2021.
9. Fang HJ. Risk factors associated with oral and maxillofacial benign tumors: a case-control study. Cell Mol Biol (Noisy-le-grand). 2017; 63: 23-6.
10. Al-Shiabani. Correlation of epstein-barr virus with breast cancer: a case control study. Universal J Pharm Res 2024; 9 (1):1-6.
11. Okbah AA. Bladder cancer: differentiation of types, age, sex distribution and associated variants with gradation. Universal J Pharm Res. 2022; 6 (6): 1-8.
12. Okbah AA, HA Al-Shamahy. Renal lesions: differentiation of malignant and benign tumors, sex and age distribution and variables associated with renal cell carcinoma. Universal J Pharm Res. 2022; 7(2): 1-8.
13. El-Zine. Prevalence of cns tumors and histological recognition in the operated patients: 10 years experience in Yemen. Universal J Pharm Res. 2021; 6(2): 1-8.
14. Al-Kibsi. PREVALENCE OF PAROTID TUMORS AMONG YEMENI PATIENTS IN SANA'A CITY, YEMEN. Universal J Pharm Res. 2024; 9(4): 1-6.
15. Alotaibi ON. Oral and maxillofacial cancer: A 35-year retrospective analysis at a referral dental hospital in Saudi Arabia. Saudi Dent J. 2022; 34(1): 56-61.
16. Gupta B, Ariyawardana A, Johnson NW: Oral cancer in India continues in epidemic proportions: evidence base and policy initiatives. Int Dent J. 2013; 63: 12-25.
17. Mehrotra R, Pandya S, Chaudhary AK, Kumar M. Prevalence of oral pre-malignant and malignant lesions at a tertiary level hospital in Allahabad, India. Asian Pac J Cancer Prev. 2008; 9: 263-5.
18. Torres-Domingo S, Bagan JV, Jiménez Y. Benign tumors of the oral mucosa: a study of 300 patients. Med Oral Patol Oral Cir Bucal. 2008; 13: 161-6.
19. Mandel L, Baurmash H. Irritation fibroma. Report of a case. N Y State Dent J. 1970; 36: 344-7.
20. Bhasin M, Bhasin V, Bhasin A. Peripheral ossifying fibroma. Case Rep Dent. 2013; 2013: 497234.

21. Bhat A, Mitra S, Chandrashekar C, Solomon M, Kulkarni S. Odontogenic cysts and odontogenic tumors in a large rural area from India. A 10-year reflection. Med Pharm Rep. 2019; 92: 408-12.

22. Raj A, Ramesh G, Nagarajappa R, Pandey A, Raj A. Prevalence of odontogenic lesions among the Kanpur population: an institutional study. J Exp Ther Oncol. 2017; 12: 35-42.

23. Manjunatha BS, Sutariya R, Nagamahita V, Dholia B, Shah V. Analysis of gingival biopsies in the Gujarati population: a retrospective study. J Cancer Res Ther. 2014; 10: 1088-92.

24. Sharma P, Saxena S, Aggarwal P. Trends in the epidemiology of oral squamous cell carcinoma in Western UP: an institutional study. Indian J Dent Res. 2010; 21: 316-9.

25. Ganesh R, John J, Saravanan S. Socio demographic profile of oral cancer patients residing in Tamil Nadu - a hospital based study. Indian J Cancer. 2013; 50: 9-13.

26. Shenoi R, Devrukhkar V, Sharma BK, Sapre SB, Chikhale A. Demographic and clinical profile of oral squamous cell carcinoma patients: a retrospective study. Indian J Cancer. 2012; 49: 21-6.

27. Shamim T, Varghese VI, Shameena PM, Sudha S. A retrospective analysis of gingival biopsied lesions in South Indian population: 2001-2006. Med Oral Patol Oral Cir Bucal. 2008; 13: 414-8.

28. Kamath KP, Vidya M, Anand PS. Biopsied lesions of the gingiva in a southern Indian population - a retrospective study. Oral Health Prev Dent. 2013; 11: 71-9.