DOI: 10.37990/medr.1159536 Med Records 2023;5(2):192-5

MEDICAL RECORDS-International Medical Journal

Research Article

Histopathological Analysis of Tongue Lesions and Distribution by Age Groups

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Abstract

Aim: To retrospectively evaluate the histopathological characteristics of biopsies taken from tongue lesions and compare the results with current literature.

Material and Methods: Histopathological results of biopsies taken from 163 patients with suspected tongue lesions between January 2017 and January 2022 were retrospectively reviewed. The results were evaluated in different age groups.

Results: Seventy-two (44.2%) of the patients were male and 91 (55.8%) were female. The mean age of the patients was 47.76±17.33 years. The lesion was benign in 135 (82.8%) patients, precancerous in 4 (2.5%), and malignant in 24 (14.7%).

Of the 135 patients with benign findings, squamous papilloma was detected in 33 (24.4%) patients and irritation fibroma in 19 (14.1%). Ulcer/inflammatory granulation tissue was detected in 18 (13.3%) patients, parakeratosis/acanthosis in 14 (10.4%), fibroepithelial polyp in 14 (10.4%), and pseudoepitheliomatous hyperplasia in 9 (6.7%). Less frequently, lymphoid hyperplasia, neurofibroma, mucocele, and verruca vulgaris were detected in 1 (0.7%) patient each. Squamous cell carcinoma was detected in all patients with malignancy. When evaluated according to age groups, it was found that the patients were most commonly in the 50–59 (27.6%) age group, followed by the 40–49 (19.6%) age group.

Conclusion: The results show that most tongue lesions are benign. It should be noted that not every mass in the tongue is cancerous, but leukoplakic and ulcerated areas can be malignant. Due to the rapid metastasis of tongue lesions, early diagnosis and treatment may contribute significantly to the prognosis of patients.

Keywords: Biopsy, tongue, histopathology, carcinoma, leukoplakia

INTRODUCTION

The tongue is a muscular organ located on the lower surface of the oral cavity; it consists of a freely movable body and a root that forms part of the anterior wall of the pharynx and is attached to the base of the pharynx. It is lined with stratified keratinized squamous epithelium on the dorsal surface and non-keratinized epithelium on the ventral surface, which contains numerous nerve endings, fat cells, minor salivary glands, and lymphoid tissues with a richly vascularized network. Each of these structures may be the origin of benign, malignant, or precancerous lesions (1).

Oral cavity cancers are observed in the tongue the second most frequently after the lips. Squamous cell carcinoma (95%) is observed most frequently, whereas adenoid carcinoma is rarely observed (1%) (2). Although squamous cell tongue cancers are common in male patients over 50 years of age, there has been an increase in its incidence in younger patients as well (3). It has been reported that tongue cancer progresses more aggressively in young patients than in the elderly patient group, and the recurrence and survival rates are worse (4). With regard to etiology, smoking and alcohol use are blamed in the elderly patient group. In young patients, genetic predisposition comes to the fore rather than smoking and alcohol (5,6).

CITATION

Altintas M. Histopathological analysis of tongue lesions and distribution by age groups. Med Records. 2023;5(2):192-5. DOI:1037990/medr.1159536

Received: 08.08.2022 **Accepted:** 21.11.2022 **Published:** 23.03.2023

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Although lesions in the oral cavity and tongue can be easily examined, their diagnosis and treatment remain challenging. In studies involving lesions in the tongue, clinical appearance and prevalence studies of the tongue are seen more frequently (7,8). In our study, the histopathological results of biopsies performed for suspicious lesions on the tongue and their distribution by age were retrospectively reviewed. We aim to contribute to the early diagnosis and treatment of tongue tumors prone to metastasis.

MATERIAL AND METHOD

The histopathological results of biopsies of 163 patients who underwent tongue biopsies for suspicious lesions at the Antalya Training and Research Hospital between January 2017 and January 2022 were retrospectively reviewed. The distribution of the data by age groups was examined. Outpatient consultation cases were excluded from the study.

The demographic data of patients and pathological findings were obtained from pathology reports and hospital data systems. Demographic data such as age and gender as well as histopathological findings of the patients were evaluated. The patients were categorized into nine groups by age: 0–9 years, 10–19 years, 20–29 years, 30–39 years, 40–49 years, 50–59 years, 60–69 years, 70–79 years, and ≥80 years. Histopathological findings were divided into three groups: benign, precancerous, and malignant.

All data were evaluated using Statistical Package for Social Sciences 18.0. The data were presented with descriptive statistics, frequency, percentage, mean and standard deviation, and minimum–maximum values.

RESULTS

The study included 163 patients with tongue lesions. Of the patients, 72 (44.2%) were male and 91 (55.8%) were female. The mean age was 47.76±17.33 (2–87 years). Benign findings were detected in 135 (82.8%) patients, precancerous in four (2.5%) patients, and malignant findings in 24 (14.7%) patients. Of patients with benign lesions, 78 (57.8%) were female and 57 (42.2%) were male, whereas for those with malignant lesions, 12 (50%) were female and 12 (50%) were male.

Of 135 patients with benign findings, it was revealed that 33 (24.4%) patients had squamous papilloma; 19 (14.1%), irritation fibroma; 18 (13.3%), ulcer/inflammatory granulation tissue development; 14 (10.4%), fibroepithelial polyps; 14 (10.4%), parakeratosis/acanthosis; nine (6.7%), pseudoepitheliomatous hyperplasia; seven (5.2%), chronic inflammation findings; six, (4.4%), lichen planus; four (3.0%), pyogenic granuloma; three (2.2%), hemangioma; two (1.5%), lymphoid hyperplasia; one (0.7%), lymphoepithelial cyst; one (0.7%), neurofibroma; one (0.7%), mucocele; one (0.7%), verruca vulgaris; one (0.7%), fungus; and one (0.7%), benign fibrous histiocytoma (Table 1).

Table 1. Distribution of benign findings in tongue biopsies

Benign Findings	Total n (%)
Benign Fibrous Histiocytoma	1 (0.7)
Fibroepithelial Polyp	14 (10.4)
Fibroma	19 (14.1)
Ulcer/Inflammatory Granulation Tissue	18 (13.3)
Chronic Inflammation	7 (5.2)
Lymphoepithelial Cyst	1 (0.7)
Lymphoid Hyperplasia	2 (1.5)
Lichen Planus	6 (4.4)
Hemangioma	3 (2.2)
Fungal Infection	1 (0.7)
Mucocele	1 (0.7)
Neurofibroma	1 (0.7)
Parakeratosis/Acanthosis	14 (10.4)
Pseudoepithelial Hyperplasia	9 (6.7)
Pyogenic Granuloma	4 (3.0)
Squamous Papilloma	33 (24.4)
Verruka Vulgaris	1 (0.7)
	135 (100.0)

Of four patients with precancerous findings, one (25%) patient had actinic keratosis and three (75.0%), low-grade dysplasia. Squamous cell carcinoma was detected in all patients with malignancy.

Table 2. Distribution of histopathological findings by age groups

Age Groups	Number of patients			Total n (%)
	Benign lesions n	Malignant lesions n	Precancerous lesions n	
< 9	3	0	0	3 (1.8)
10-19	10	0	0	10 (6.1)
20-29	9	0	0	9 (5.5)
30-39	22	3 (12.5%)	0	25 (15.3)
40-49	28	2 (8.3%)	2	32 (19.6)
50-59	40	4 (16.7%)	1	45 (27.6)
60-69	13	7 (29.2%)	0	20 (12.3)
70-79	9	5 (20.8%)	1	15 (9.2)
≥ 80	1	3 (12.5%)	0	4 (2.5)
Total	135 (82.8%)	24 (14.7%)	4 (2.5%)	163 (100.0)

While the youngest patient in our study was 2 years old and showed pyogenic granuloma, the oldest patient was 87 years old for whom the development of ulcer/inflammatory granulation tissue was observed. When we look at the distribution of patients according to age groups, the patients were in the 50–59 age group most frequently with a rate of 27.6%, and they were in the 40–49 age group second most frequently with a rate of 19.6% (Table 2).

DISCUSSION

The tongue is the most common area of oral cavity cancers after the lips. Tongue lesions can lead to serious life-threatening oral cavity cancers. A biopsy is the first step in diagnosing tongue lesions. Many factors such as age, sex, socioeconomic level, and genetic predisposition can affect the frequency of tongue lesions. Various studies have shown different results in different geographical regions (9,10). In a prevalence study conducted by Avcu et al. with 5150 patients in Turkey, the incidence of tongue lesions was found to be 44.2% in women and 62.0% in men (7).

In our study, demographic data, pathological findings, pathology reports, and hospital data systems of 163 cases with only tongue lesions between 2017–2022 were obtained. We analyzed patients demographic data, such as age and sex, as well as histopathological findings. While the youngest patient in our study was 2 years old who showed pyogenic granuloma, the oldest patient was 87 years old for whom development of ulcer/inflammatory granulation tissue was detected. Considering the distribution of the patients by age groups, the patients were in the 50-59 age group with 27.6% of the patients. The frequency of distribution by age groups is similar to the studies in the literature. In the study by Shamloo et al., most patients were in the 40–60 age group, and in the study by Alaeddini et al,. a majority of the patients was in the 45–64 age group (9,11). In our country, in the study by Aydın et al., the most frequent age range in years was found to be 40–59 for benign lesions and 60–79 for malignant lesions (12). In our study, the age range was the same in both benign and malignant lesions.

Of 135 patients with benign lesions, 78(57.8%) were female and 57(42.2%) were male. According to the frequency distribution, the most common findings were squamous papilloma in 33 (24.4%) patients; irritation fibroma, 19(14.1%); ulcer/inflammatory granulation tissue development, 18 (13.3%); fibroepithelial polyps, 14 (10.4%); parakeratosis/acanthosis, 14(10.4%); pseudoepitheliomatous hyperplasia, nine (6.7%); and chronic inflammation, seven (5.2%). Considering existing literature, Lasisi et al. found pyogenic granuloma (12.1%), fibroma (8.1%), and fibroepithelial polyps 4% (13) most frequently. Furthermore, Shamloo et al. found fibroma most frequently (42.2%) and pyogenic granuloma the second most frequently (40%) (9). In our country, in the study by Aydın et al., acanthosis/parakeratosis was observed most frequently with a rate of 20.9%, followed by fibroepithelial polyp (20.5%) and papilloma (20%) (12). As seen in studies from different regions, it is noteworthy that lesions secondary to trauma are the most common.

Of the 24 patients with malignant lesions, 12 (50%) were female and 12 (50%) were male. In all patients with malignancy, squamous cell carcinoma was found on histopathological diagnosis. In addition, one of four patients with precancerous findings had actinic keratosis and three, low-grade dysplasia. When 24 patients with malignancy were analyzed according to age groups, it was seen most frequently in the 60-69 age group with 7 (29.2%) cases. It was seen in the 70-79 age group with 5 (20.8%) cases in the second frequency. In our study, 12 (50%) of malignant lesions were seen in the 60-79 age group. In our literature review, squamous cell carcinoma constitutes more than 95% malignant tumors of the tongue. The most frequently affected part is the middle 1/3 of the free lateral border of the tongue (1,14). Azakli et al. reported that squamous cell carcinoma was the most common malignant lesion in their study that included the entire oral cavity (15). One of the suspicious lesions in the development of tongue cancer is lichen planus. Barnard et al. reported cases of squamous oral carcinoma developing on the basis of lichen planus and reported a 5% malignancy risk (16).

CONCLUSION

Lesions on the tongue may be challenging for clinicans in terms of diagnosis and treatment. Clinical examination and histopathological analysis may help categorize the type of lesion. According to our study results, it may be concluded that not every lesion on the tongue is cancer; most of them are benign. However,diagnosis and treatment must not be delayed in the case of suspicious lesions. Given that oral cavity cancers are most frequently found on the tongue after the lips and they metastasize rapidly, we believe that early diagnosis and treatment of oral cavity cancers will contribute to the prognosis of the patient.

Financial disclosures: *The authors declared that this study hasn't received no financial support.*

Conflict of Interest: *The authors declare that they have no competing interest.*

Ethical approval: *The study was conducted in accordance with the Helsinki Declaration principles and was approved by our Corporate Ethics Committee Antalya Training and Research Hospital, (2022/055)*

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