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Prevalence of Psoriasis in Cases Diagnosed With Fissured And/ or Geographic Tongue in Clinics of College of Dentistry- Hawler Medical University: A Retrospective- Prospective- Study

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ABSTRACT

Background: Both psoriasis and tongue surface changes like fissured and geographic tongue are sharing some common features like surface changes nature, inflammation process and linking to autoimmune. There is a chances for these conditions to occur simultaneously.

Aim: This research aims to find prevalence of psoriasis, in patients diagnosed as to have fissured and/or geographic tongue, in out patient clinics of college of dentistry/ Hawler Medical University.

Patient and method: A retrospective-prospective study was conducted in the oral diagnosis department at the College of Dentistry at Hawler Medical University. The study included patients who visited the clinic from September 3, 2022, to March 3, 2024. All three pathologies were searched for in history, clinical examination and documented by both data entry and digital photography.

Results: The total number of involved cases was 298. Out of which 158 (53%) being male and 140 (47%) being female. Out of all patients included, 219 (73.5%) presented with fissured tongue, 68 (22.8%) had geographic tongue, and 11 (3.7%) had both fissured and geographic tongue. Out of all cases, only 3 (1%) cases had psoriasis.

Conclusion: This study demonstrated that the incidence of fissured tongue is higher in younger individuals, followed by geographic tongue. Additionally, a correlation between fissured and geographic tongue was observed. However, there was a weak or nonexistent association between both abnormalities and psoriasis.

Keywords: Depapillation, fissured tongue, geographic tongue, oral lesion, psoriasis

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INTRODUCTION

The tongue is considered the primary muscular organ in the mouth and the most elaborately constructed structure in the human body. The tongue fulfils a range of functions, such as articulating speech, consuming food, facilitating swallowing, aiding in respiration, and producing vocal sounds.[1]

The tongue can serve as an early indicator of a systemic disease, potentially leading to a range of systemic problems.[2] Systemic illnesses may exhibit distinct oral manifestations more commonly than other conditions. There has been an anticipation of an increase in the number of individuals with systemic illnesses that manifest in the oral cavity.[3]

The dental health care of the elderly may be influenced by various systemic illness symptoms that are likely to affect them.[4]

Fissured tongue (FT), sometimes referred to as scrotal tongue or lingua plicata, is a prevalent tongue ailment characterized by a prominent, deep groove on the dorsal surface of the tongue.[5] Tongue fissures can vary in depth, ranging from shallow to profound. Aside from its function in capturing food, a bifurcated tongue can also lead to localized discomfort, a sensation of burning, and an unpleasant odor.[7, 6]

Geographic tongue (GT), also known as benign migratory glossitis, erythema migrans, and annulus migrans, is a harmless condition of the tongue that usually affects only the top surface of the tongue. It is characterized by multiple distinct, red, smooth patches that are surrounded by a raised white border.[8]

The name "migratory" indicates that these lesions have the ability to change in size, pattern, and location.[9]

An estimated 0.6% to 4.8% of the global population is affected by this condition. It is more commonly observed in young individuals compared to adults, with a slight preference for females.[10, 11]

It is frequently a transient and recurrent oral ulceration that may resolve spontaneously.[12] Some of the hypothesized causes include emotional stress, immunological factors, hereditary factors, atopic or allergic tendency, cigarette smoking, hormone fluctuations, zinc insufficiency, fissured tongue, psoriasis, and diabetes mellitus.[13]

Furthermore, there exists a potential correlation between geographic tongue and several conditions including psoriasis, diabetes mellitus, Reiter's syndrome, Down's syndrome, pregnancy, psychological variables, family history, and the use of certain medications such as oral contraceptive pills and lithium carbonate

Additional investigations have provided further evidence of a correlation between geographic tongue and fissured tongue.[11, 14]

Usually the GT is asymptomatic. Nevertheless, certain individuals may encounter discomfort or a sensation of burning, especially following the consumption of spicy or acidic food.[14]

Psoriasis is a prevalent inflammatory skin condition that affects around 1%–3% of the global population.[15] The course of this condition is chronic and is characterized by inflammation, hereditary factors, and immunological fact.[16] The cause of this condition is currently unidentified. However, it is understood that it disrupts the normal cycle of epidermal development, leading to abnormal proliferation and differentiation of keratinocytes. Additionally, there are inflammatory and vascular changes, along with the presence of a leukocyte infiltrate consisting of mast cells, neutrophils, activated T-lymphocytes, and dendrocytes. The condition can impact nearly the whole surface of the skin, and it can manifest as either a localized or widespread form.[16, 17]

From a clinical perspective, psoriasis can be classified into several forms, including vulgaris, guttate, inverse, psoriatic arthritis, palmoplantar, pustular, and erythrodermic. Each type is characterized by erythema, desquamation and elevation.[17,18]

Oral lesions in psoriasis are infrequent and subject to debate.[19]

According to several findings, psoriasis does not typically result in oral lesions. However, other research suggest that these lesions may occur infrequently. The oral manifestations of psoriasis primarily consist of nonspecific lesions, such as GT and FT.[20]

PATIENTS AND METHODS

A prospective and retrospective study was conducted at the clinic of the oral diagnosis department in the College of Dentistry at Hawler Medical University. The study included patients who visited this department during the academic years 2022-2023 and 2023-2024. A thorough history

and clinical examination were performed to identify cases and detect the presence of psoriasis. All findings were recorded in special case sheets. The individuals' medical histories were authenticated by clinical examinations and their most recent medical records. Detailed information on the individuals' demographic characteristics, overall health, and any tongue symptoms were recorded using a specifically designed case sheet. The patients underwent examination on a dental chair, where they were assessed using a mouth mirror, a straight probe, and under illumination from the dental chair light.

After taking permission from the patients verbally, digital photographs were taken for fissured and geographic tongue and skin psoriasis for the purpose of comparison and identification.

Sample selection

Cases visited the oral diagnosis department with diagnosis of either fissured or geographic tongue, or a combination of both disorders; willing to participate in the study

Statistical analyses

The data is presented as means ± standard error (SE) and statistical analysis is conducted using software (SPSS version 28). The prevalence of disorders in males and females was compared using the Fisher exact test. The relationships between these disorders, as well as their relationship with psoriasis, were also analyzed. Specifically, the associations of various variables such as sex, age groups, medical history, drug history, fissure, and/or geographic tongue were calculated.

Figure 1. a case with fissure and geographic tongue

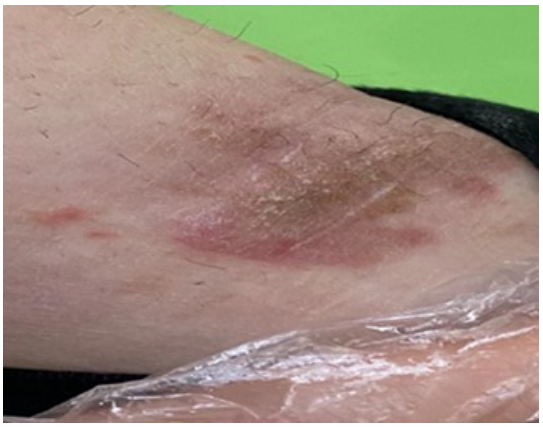

Figure 2. (A) psoriasis lesion on Lower anterior part of the leg leg

Figure 2. (B) fissure tongue

Figure 3. geographic tongue

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RESULTS

A total of 298 cases with fissure and geographic tongue were included in the study. Among these patients, 158 (53%) were male and 140 (47%) were female.

As age range, 120 cases (40.3%) were in the age group (15-30), 89 cases (29.9%) were in the age group 31-45 years; 74 cases (24.8%) in the age range of 46-60, and only 15 cases (5%) were over 60 years old.

Out of total, 219 cases (73.5%) exhibited fissured tongue, 68 cases (22.8%) showed geographic tongue, and there were 11 cases (3.7%) that had both.

Descriptive information is shown in table 1.

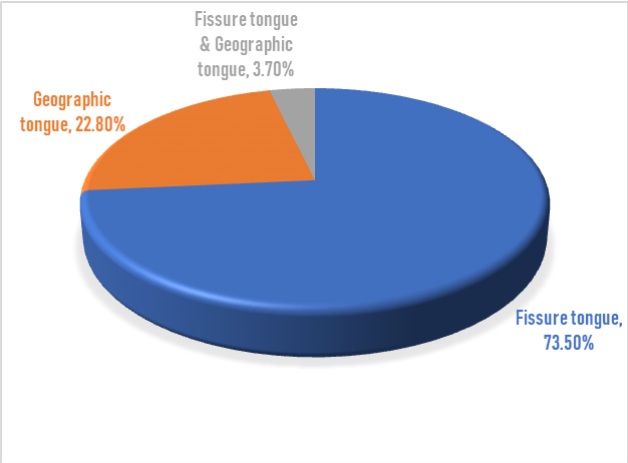

Figure 4. prevalence of fissured tongue, geographic tongue and fissure and geographic tongue

Table 1. Descriptive of Patient information

		Count	%
Sex	Male	158	53%
	Female	140	47%
Age Group	15-30	120	40.3%
	31-45	89	29.9%
	46-60	74	24.8%
	>60	15	5.0%
Medical History	No	266	89.3%
	Yes	32	10.7%
Drug History	No	278	93.3%
	Yes	20	6.7%
Fissure and/or Geographic tongue	Fissure tongue	219	73.5%
	Geographic tongue	68	22.8%
	Fissure tongue & Geographic tongue	11	3.7%
Psoriasis	No	295	99.0%
	Yes	3	1.0%

The Fisher exact test showed that the associations between various factors (such as sex, age groups, medical history, drug history, fissure, and/or geographic tongue) and psoriasis were calculated and shown in figures 5– 9.

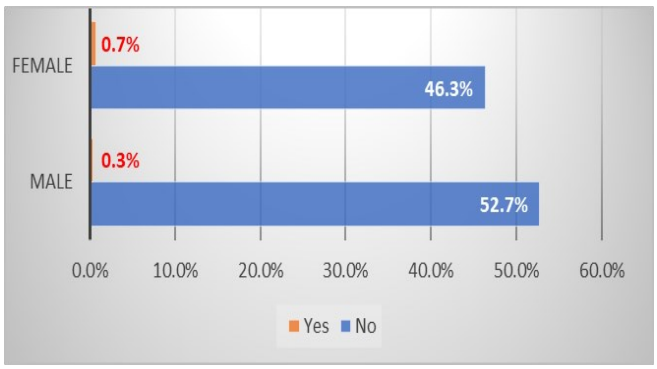

Figure 5. Psoriasis with Sex

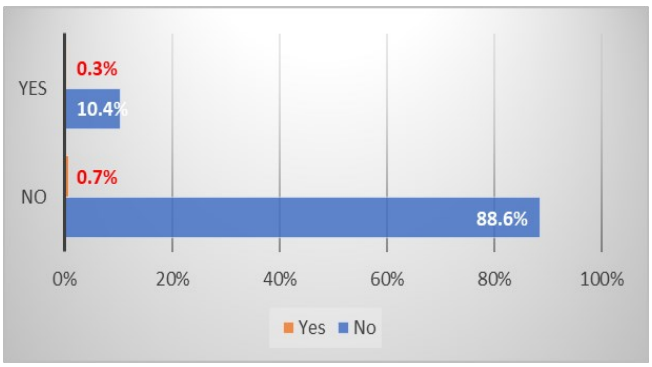

Figure 7. Psoriasis with Medical History

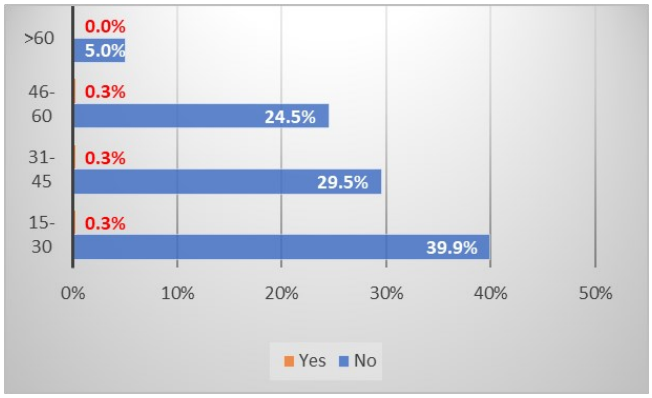

Figure 6. Psoriasis with Group Age

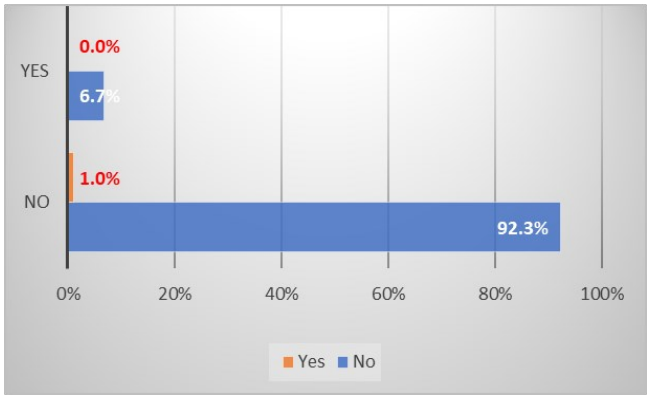

Figure 8. Psoriasis with Drug History

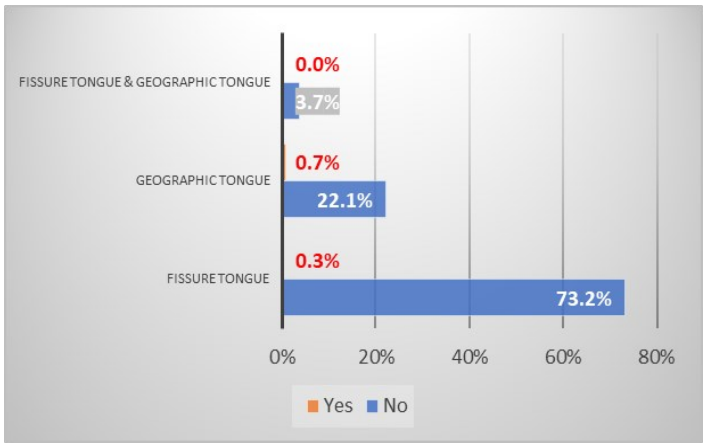

Figure 9. Psoriasis with Fissured and/or Geographic tongue

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DISCUSSION

In this study, we found that of the 298 patients examined, 73.50% had fissured tongue, either alone or in combination with geographic tongue. This finding aligns with other studies conducted by Darwazeh et al and Gönül et al,[21, 22] which suggest that fissured tongue is a prevalent condition globally. On the other hand, the total occurrence rate of fissured tongue and geographic tongue was determined to be 3.7%, suggesting that fissured tongue is more common than the two disorders altogether. Furthermore, the occurrence of geographic tongue, a condition that is less frequent than fissured tongue, was determined to be 22.80%.

The study's findings suggest a correlation between fissured tongue and geographic tongue, which is consistent with the studies conducted by Jahanbari et al. in 2009 [23] and Musaad et al. in 2015 [24] However, the occurrence of fissured tongue, geographic tongue, and the combination of both with psoriasis was found to be infrequent, which aligns with the findings of Jainkittivong and Langlais in 2005.[29]

Our results indicate that there is a rare relationship between fissured and/or geographic tongue with psoriasis. However, statistically, this relationship is not significant. This finding contradicts the conclusions of previous studies such as Yesudian et al (2012),[30] Migliari et al (2004),[31] and Gonzaga et al (2013),[32] who found a relationship between psoriasis and geographic and fissured tongue. According to these studies, it is not common to see in psoriatic patients oral manifestations such as fissured and/or geographic tongue. The study demonstrated a reversal of the previously established relationship between geographic tongue and psoriasis.[30,31,32] This implies that not all patients with fissured and/or geographic tongue must have psoriasis. This finding aligns with the conclusions drawn by Jorge et al. (2017),[25] suggesting that the variance in study samples and other environmental variables may account for this discrepancy.

The prevalence of geographic tongue is higher among younger individuals, primarily due to various predisposing factors such as emotional stress, immunological variables, hereditary factors, atopic or allergic predisposition, cigarette use, hormone changes, zinc deficiency, fissured tongue, and family history. This finding is supported by Oyetola et al and Picciani et al.[26, 27] Additionally, there is a higher incidence of the condition in females compared to males, with a ratio of 1:2. This is attributed to the influence of sex hormones on females, as supported by Ghalayani et al.[28]

CONCLUSION

This study demonstrated that the incidence of fissured tongue is higher in younger individuals, followed by geographic tongue. Additionally, a correlation between fissured and geographic tongue was observed. However, there was a weak or nonexistent association between both abnormalities and psoriasis. Therefore, further research with larger sample sizes and diverse ethnic groups is necessary to obtain conclusive and rational findings.

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