



Original Research Article

Study of oropharyngeal ulcers with their commonest anatomical sites of presentation correlated with histopathological diagnosis among the north Bengal population

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ARTICLE INFO

Article history:

Received 31-07-2020

Accepted 06-10-2020

Available online 29-12-2020

Keywords:

Ulcer

Oral Cavity

Oropharynx

Anatomical sites

ABSTRACT

Introduction: Oropharyngeal ulcers are very common in North East part of India due to bad oral habits like chewing of tobacco etc. A study was performed at North Bengal Medical College and Hospital among the patients attending otorhinolaryngology outdoor to explore the relationship of different types and proportion of oropharyngeal ulcers with their commonest anatomical sites and to elicit the relationship with bad oral habits.

Aims: • To elicit the different types and proportions of oropharyngeal ulcers. • To explore the relationship of different histopathological types with anatomical sites. • To identify the relationship with addiction.

Material and Methods: This is a Cross-sectional Observational Hospital based study, conducted in the Otorhinolaryngology outdoor of North Bengal Medical College and Hospital twice a week. 102 patients were selected as study population after maintaining inclusion and exclusion criteria.

Results: The study shows that the most common type of ulcer is aphthous (25.49%) and the least common types are erythroplakia and autoimmune ulcers (1.96%). It is found that most of the ulcers affect the tongue (28, 27.45%) and the least affected site is the retromolar trigone (4, 3.92%). In the tongue the lateral border is the most commonly affected site. Chewing betel nut is the commonest addiction associated with oropharyngeal ulcers.

Conclusion: The study performed to determine different histopathological types, proportions and commonest anatomical site of presentation of different oropharyngeal ulcers which are very common in the North East part of India. Since no such study found in this area previously this study although very preliminary, might help for future studies of similar nature in an area where oral ulcer is very much prevalent. However a short study of this nature cannot be a conclusion and a detailed cohort study is essential to cover all the clinical and pathological aspects of the problem.

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1. Introduction

Oral ulcers have been an everyday problem for many otorhinolaryngologists, physicians and dental surgeons. Diagnosis and treatment should be made promptly without any delay. The study of oral ulcers aims at identifying the proportion and commonest anatomical sites of occurrence

of all the oral ulcerative conditions in North Bengal Medical College and Hospital for a better orientation and understanding of this group of disorders.

An ulcer is a discontinuity of an epithelial surface. There is usually progressive destruction of surface tissue, as distinct from death of macroscopic portion that is gangrene or necrosis.¹ Oral ulcer is an ulcer that occurs on the mucous membrane of oral cavity that is, oral cavity proper and oropharynx.² Oral ulcer has an estimated point prevalence

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of 4% in the United States.³ Most ulcers are benign and resolve spontaneously but a small proportion of them are malignant.⁴ Majority of the ulcers are due to local causes like trauma and burns,⁵ some are caused by apthae or malignant lesion some appear as part of systemic diseases.⁶ Oral ulcers may have a great many causes, although in some no cause is identified. They are termed acute if they persist for less than three weeks and chronic if they persist for longer than three weeks.⁷ A non-healing ulcer that persists for more than three weeks is the most frequent presentation of early stages of squamous cell carcinoma.⁷

The list of possible causes that may present an ulcerative lesion in the oral cavity is quite extensive. The focus here will be on the most common causes of those lesions with their commonest anatomical sites of presentations.

1.1. Non neoplastic causes

1.1.1. Traumatic ulcer

Trauma is the most common cause of ulceration of oral mucous membranes. Traumatic ulceration may result from physical, chemical or thermal injury to the tissue. They are mildly painful, diffused or localized. According to Chen et al traumatic ulcers are seen mostly over buccal mucosa (42%), tongue (25%), and lower lip (9%).⁸

1.1.2. Aphthous ulcer

Aphthous ulcers are painful, discrete and round, measuring less than 1 cm in diameter with a grayish base and a red halo which typically heals spontaneously within 10 days.⁹ 10-25% of the general population suffers from this non contagious. In a study on about 20000 people the prevalence was found to be 17.7%.¹⁰ According to Hamed et al aphthous ulcers are commonly found over tongue (39.7%), buccal mucosa (32.3%), lip (26%), floor of mouth (2%).¹¹

1.1.3. Infection causing oral ulcer

1.1.3.1. Herpes virus infection. The most common viral precipitant of ulcers is herpes simplex virus type - 1. Affected individuals may have widespread, small, superficial ulcers of the oral mucosa. A study of about 10,000 people across six countries found herpes infection to have affected about 33.2% of men and 28% of women.¹² Ulcers are commonly found over the mucocutaneous junctions of lips (Ficarra G 1997, Kleymann G 2005, Wu JJ et al, 2005). Our study also corroborates that.

1.1.3.2. Candidal infection. *Candida albicans* is the most common fungal infection present as creamy white oral lesion over tongue, inner cheek, tonsil and posterior pharyngeal wall.

1.2. Ulcer due to autoimmune diseases

1.2.1. Systemic lupus erythematosus

Oral lesions are noted in 5%- 25% of the patients having systemic lupus erythematosus.¹³ The lesions mainly affect the hard palate (88%) as per R. Jonson et al. These may present as lichenoid areas that may be nonspecific in appearance, or even sometimes appear granulomatous.

1.2.2. Ulcer associated with dermatological diseases

1.2.2.1. Stevens - Johnson syndrome. This is a severe form of erythema multiforme with systemic symptoms which causes diffuse ulceration and crusting of the lips, tongue and buccal mucosa.

1.2.2.2. Lichen planus. It affects 1-2% of general adult population.¹⁴ Oral mucosal lesions usually occur on the buccal mucosa, gingival, dorsum of tongue, labial mucosa and vermilion of the lower lip.^{15,16} The lesions may appear in different forms or a mixture of many forms like white striations (Wickham's striae), white papule, white plaques, erythema, blisters, bulla formation and shallow ulcers.

1.2.3. Allergic ulcers

Direct mucosal contact with any number of drugs, most commonly aspirin,⁹ may cause ulceration. There is a wide variety of substances which may cause contact ulceration, like chrome cobalt denture, gold crowns, chewing gum,¹⁷ dental amalgam, toothpaste.^{18,19}

1.3. Oral ulcers having neoplastic potential

1.3.1. Leucoplakia

It is a white plaque on oral mucosa, usually premalignant. Common locations include tongue, floor of the mouth, and buccal mucosa.²⁰ According to Adam P. Fagin et al it commonly affects buccal mucosa (46%), tongue (28.9%) and lip (8.9%). Leucoplakia has strong association with smoking,²¹ alcohol consumption and tobacco.²² In studies reported in recent years, the prevalence of oral leucoplakia varies between 1.1% and 11.7%, with a mean value of 2.9%.²³

1.3.2. Erythroplakia

It represents a red velvety eroded area within the oral cavity usually premalignant. Most commonly affected areas were reported as soft palate, floor of the mouth and buccal mucosa.²⁴ Prevalence of Erythroplakia varies between 0.02% and .83%. Hashibe et al²⁵ reported that chewing tobacco and alcohol drinking are strong risk factors for Erythroplakia in the Indian population.

1.4. Neoplastic causes of oral mucosal ulcers

1.4.1. Squamous cell carcinoma

The common malignancies of the mouth may manifest as oral ulcers. Squamous cell carcinoma is the most common tumor of the mouth, typically manifests as a solitary ulcer of dorsum or lateral border of tongue or floor of mouth or lower lip. Data from Journal of Applied Oral Science of Bauru School of Dentistry shows the commonest sites of infections are lateral border of tongue (37%), alveolar mucosa (20%) and ventral aspect of tongue.

A prospective study conducted at King Hussein Medical Centre outpatient dental clinic of Jordon from July 2009 to March 2011 prevalence of oral ulceration is 41.08% [Pakistan Oral and Dental Journal Vol 33, No 1(April 2013)]. Among them 11.07% traumatic, 17.10% infective, 55.78% aphthous, 3.39% allergic, 8.93% associated with gastrointestinal tract disease, 1.92% associated with autoimmune diseases, 1.48% associated with dermatological diseases and 0.33% are of malignant one.

An Indian study, conducted at Karnataka on 2013 showed² that 50% of oral ulcers are nonspecific ulcers, 15% are aphthous, 8.3% are traumatic, 6.5% are malignant, 6.5% are dental, 6.4% are infective and 6.5% are associated with skin diseases

A study conducted at Shimoga Institute of Medical Science of Karnataka, India on 2013² showed that history of smoking (49%), consumption of alcohol (20%), chewing of betel nut (13%) and chewing of tobacco (6.5%) were the main etiology of oral ulceration.

So far the literatures have searched there is no such study conducted in West Bengal for the anatomical locations of oral ulcer. In North East India specially northern part of West Bengal due to bad habit of chewing pan, betel nut and other nicotine product, the occurrence of oral and oropharyngeal ulcers are common. Hence the study has been taken to identify the different locations of ulcers among patients of North Bengal population.

2. Materials and Methods

This is a Cross-sectional Observational Hospital based study. The study has been conducted under the purview of the Department of Otorhinolaryngology keeping liaison with Department of Anatomy in North Bengal Medical College and Hospital, Sushrutnagar, Dist.- Darjeeling, West Bengal. Newly diagnosed cases having oral and oropharyngeal ulcers attending Otorhinolaryngology outdoor at North Bengal Medical College were under this study. Proper consent was taken before the study. The study was conducted during the period of July 2014- June 2015.

The study was conducted in the Otorhinolaryngology outdoor twice a week for subsequent six months for data collection. Every enrolled new patient was enquired

for having any oral/ oropharyngeal ulcers. Those found to have ulcers in their oral cavity/oropharynx was further approached with pre-validated, semi structured questionnaires and clinical examination.

Thus total 134 patients were collected, those having oral/ oropharyngeal ulcers. Among those collected patients, 20 patients did not give consent for being in this study. Therefore remaining 114 patients were taken for study procedures. Among those 114 patients punch biopsy were taken from those who were in need of that. But 12 patients did not turn back with their histopathological reports. Thus finally 102 patients were selected as study population.

3. Results and Analysis

The present study on oral and oropharyngeal ulcers was carried out at the department of Otorhinolaryngology, Anatomy and Pathology of North Bengal Medical College and Hospital, Darjeeling. 102 patients clinically presenting with ulcers were studied to find out the proportion of different oral and oropharyngeal ulcers with regard to commonest anatomical sites of presentation.

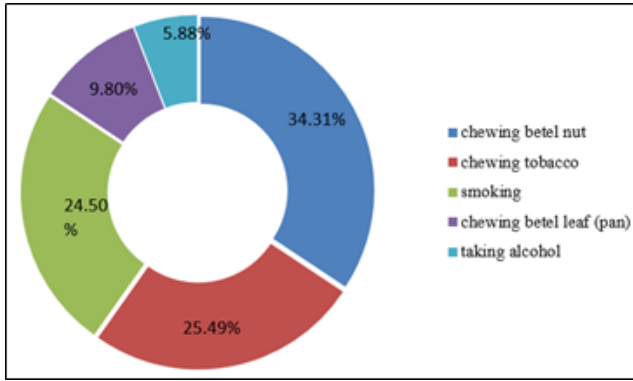
The details of every patient were recorded in case data sheets and after completion of the study the result was compiled, tabulated and analyzed to draw conclusion. The following is the result.

Table 1: Distribution of ulcers according to types

Type of ulcer	No. of patients	Percentage
Aphthous	26	25.49
Malignant	23	22.54
Traumatic	19	18.62
Infected	10	09.80
Dermatological	07	06.86
Leukoplakia	07	06.86
Allergic	06	05.88
Erythroplakia	02	01.96
Autoimmune	02	01.96

Table 2: Distribution of ulcers according to site:

Site of ulcer	No of patients	Percentage
Tongue	28	27.45
Buccal mucosa	18	17.64
Tonsil	16	15.68
Lip	12	11.76
Upper and lower alveoli	10	09.80
Soft palate	08	07.84
Hard palate	06	05.88
Retromolar trigone	04	03.92



Graph 1: Percentage of different habits related with ulcers



Fig. 1: Leukoplakia of oral cavity



Fig. 2: Multiple aphthous ulcer of floor of mouth

Table 3: Commonest anatomical sites of different types of ulcers

Type of ulcer	Anatomical site	Percentage (%)
Aphthous	Underneath tongue	30.76%
Malignant	Lateral border of tongue	52.17%
Traumatic	Lateral border of tongue	47.36%
Infective	Tongue	42.85%
Dermatological	Buccal mucosa	42.85%
Leukoplakia	Buccal mucosa	57.14%
Allergic	Lip	66.6%
Erythroplakia	Soft palate	50%
Auto immune	Hard Palate	100%



Fig. 3: Traumatic ulcer of tongue

4. Discussion

An oral ulcer is an ulcer that occurs on the mucous membrane of the oral cavity (Vorvick LZ, Zieve D, December 2012). All patients having oral ulceration should be fully investigated to establish a definitive clinical and histopathological diagnosis and anatomical location and to eliminate the possibility of an underlying systemic disorder or oral malignancy.

Oral ulcer has an estimated point prevalence of 4% in the United States.³ British Dental Journal 202, published on February 2007 stated the prevalence of oral ulceration was 30.5%. An Indian study among 3244 patients on 2010- 2012 showed the overall prevalence of oral ulcer was 44.5%.²⁶

Oral ulcers may have a great many causes, although in some no cause is identified. Most ulcers are benign and resolves spontaneously but a small proportion of them are malignant.⁴ Majority of the ulcers are due to local causes,⁵ some are caused by apthae, malignant neoplasia or appear as a part of systemic diseases.⁶

Oral ulcerations are strongly associated with bad oral habits like chewing of tobacco and betel nut, smoking and consumption of alcohol. The tradition of chewing betel nut and tobacco in North East part of India is very old.

Most of the people in this region like to have betel nut with betel leaf. They also frequently chew tobacco (Gutkha) which causes irritation of mucous membrane of oral cavity and simultaneously causes oral ulcerations. Besides this the people of North East India are addicted to other sources of tobacco like smoking cigarette, bidi and snuffing. Since the North Bengal Medical college is in the North East part of West Bengal as well as India and so far the literatures have been searched there is no study conducted in West Bengal for the clinical profile to identify the common anatomical sites of presentation of different types of oral ulcers, the study has been conducted in the outpatient door of department of Otorhinolaryngology of North Bengal Medical College.

The findings in our study, involving 102 patients corroborates several findings of earlier studies; however some discordance was also revealed. In our study it was found that the highest incidence of ulcers were seen involving lateral border of tongue (27.45%) followed by buccal mucosa including gingivobuccal sulcus (17.64%), tonsil (15.68%), lip (11.76%), upper and lower alveoli (9.8%), soft palate (7.84%), hard palate (5.88%) and retromolar trigone (3.92%). Thimmappa et al also found in their study that the lateral border of tongue was the site for highest incidence of ulcers.

Apthous ulcers (25.49%) were found to be most common type of ulcers found in our study of 102 patients and the commonest anatomical site found to be ventral aspect of tongue (30.76%) which corroborates the study of Hamed et al.

Malignant ulcer was found to be second most common type (22.54%) and lateral border of tongue (52.17%) found to be most common anatomical site which corroborates the Journal of Applied Oral Science of Baura School of Dentistry which showed also that the lateral border of tongue is most common affected site (37%).

In this study we found that traumatic ulcer accounts for (18.62%) of the total 102 patients. Commonest site for traumatic ulcer found to be the lateral border of tongue (47.36%) which also corroborates the finding of a USA study of 1997.²⁷

Hard palate found to be most common site for ulcers due to autoimmune diseases like lichen planus which also corroborates with the other finding.

Premalignant lesions like leukoplakia (6.86%) and erythroplakia (1.96%) were also found in our study. The most common site found to be the buccal mucosa (85.7%) in case of leucoplakia which corroborate other study.

In our study of 102 patients having oral ulcers, we also found that most of them (34.31%) had the poor habit of chewing betel nut followed by chewing tobacco (24.50%), smoking (25.49%), chewing only pan (9.8%) and taking alcohol (5.8%). We also found that betel nut chewing is associated with ulcers mostly found over commisure of mouth which corroborate other North Indian study.²⁸

5. Conclusion

The followings are the findings of our study in a nutshell:

1. Among the different types of oral and oropharyngeal ulcers, Aphthous ulcer was most common amongst our study group and was present in 25.4% patients followed by malignant ulcers, present in 22.5%. The other types found in descending order were traumatic ulcers- 18.6%, infected ulcers- 9.8%, leukoplakia- 6.8%, ulcers associated with dermatological diseases- 6.8%, allergic ulcers- 5.8%, Erythroplakia- 1.9% and ulcers associated with autoimmune diseases- 1.9%.
2. According to distribution of ulcers within the oral cavity and oropharynx in the study group, the commonest site was tongue- 27.4% followed by buccal mucosa- 17.6%. The other sites in descending order were tonsil- 15.6%, lip- 11.7%, upper and lower alveoli- 9.8%, soft palate- 7.8%, hard palate- 5.8% and retromolar trigone- 3.9%.
3. As per most common anatomical site of presentation of different types of ulcers we found that apthous- underneath tongue (30.76%), malignant- lateral border of tongue (52.17%), traumatic- lateral border of tongue (47.36%), infective- tongue (42.85%), dermatological- buccal mucosa (42.85%), leukoplakia- buccal mucosa (57.14%), allergic- upper and lower lip (66.66%), erythroplakia- buccal mucosa (50%) and autoimmune- hard palate (100%).
4. In our study of 102 patients having oral ulcers, we also found that most of them (34.31%) had the poor habit of chewing betel nut followed by chewing tobacco (24.50%), smoking (25.49%), chewing only pan (9.8%) and taking alcohol (5.8%).

This study although very preliminary, might help for future studies of similar nature in an area where oral ulcer is very much prevalent however a short study of this nature cannot be a conclusion and a detailed cohort study is essential.

6. Source of Funding

No financial support was received for the work within this manuscript.

7. Conflict of Interest

The authors declare they have no conflict of interest.

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Cite this article: (Sen) TG, Saha PK, Sen S. Study of oropharyngeal ulcers with their commonest anatomical sites of presentation correlated with histopathological diagnosis among the north Bengal population. *Panacea J Med Sci* 2020;10(3):258–263.