Original Article

Occurrence of Angular Cheilitis Among Dental Patients of Sindh Province: A Cross-Sectional Study

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ABSTRACT

Objective: To determine the occurrence of angular cheilitis (AC) among private dental patients of Sindh Province.
Study Design: Cross-sectional study
Place and Duration of Study: This study was conducted at various dental clinics of Sindh Province from January 2019 to June 2020 for a period of six months.
Materials and Methods: A total of 70 patients diagnosed with angular cheilitis were included in this study, after obtaining the consent from patients, the data was transferred to SPSS version 23 for analysis. The chi-square test was applied in which p value 0.05 was considered significant.
Results: In this study, 70 patients clinically diagnosed with Angular cheilitis were participated with a mean age 63.07 and SD ±11.08. The reason for AC was evaluated and the most common reason found in both the genders was poor denture construction 34 (48.57%) followed by loss of vertical dimensions or attrition 19 (27.14%) and nutritional deficiencies 11 (15.71%). The cross-tabulation between reasons of AC with gender showed insignificant findings with a p-value of 0.34.
Conclusion: Poor denture fabrication, loss of vertical dimension of prosthesis and nutritional deficiencies were identified as a causative factor. Large sample size is required to obtain meaningful estimate of AC among dental patients.
Key Words: Candida, Candida Albicans, Cheilitis, Staphylococcus aureus, angular cheilitis

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INTRODUCTION

Angular Cheilitis (AC) is defined as inflammation at the corner of mouth. The word 'Cheil' (Greek word) denotes for lip and suffix 'itis' specifies inflammation.[1] This condition is also known by several names such as angular stomatitis, angular cheilosis and commissural cheilitis.[1,2] Clinically angular cheilitis may affect one or both angle of mouth. The patient may complaint soreness, pain, ulceration cracking, bleeding, keratosis and mild ulceration. This condition may become painful on opening of mouth and may last to several days[3] in some cases.

The etiology of angular cheilitis is not well understood but the possible factors involved are: loss of vertical height of the prosthesis. It may be due to prolonged use of denture wearing or fall off inter maxillary space / reduced in vertical dimensions. This may be due to attrition of teeth which is most commonly occurs with advance age.[2] The loss of vertical dimension may result in over-closure of the jaws which will produce occlusive folds at the corner of mouth where saliva tends to collect and the skin subsequently becomes macerated, fissured, secondarily infected and becomes colonized mainly with Candida and few bacterial species such as Staphylococcus aureus species.[4,5] Other contributing factors include nutritional deficiencies, systemic diseases, elderly prolonged denture users and immunocompromised, such as HIV-infected, diabetes mellitus, and anemia patients.[6] Evidences have shown the association of angular cheilitis with oral candidiasis and bacterial pathogens such as staphylococcus aureus and β-hemolytic streptococci.[7] Some medical procedures like bariatric surgical and ileal resection may manifest nutritional deficiencies. Other conditions like chronic pancreatitis, chronic gastritis, and Crohn's disease are the possible risk factors for nutritional deficiencies. Study has shown that vitamin B deficiency (cynocobalmin, riboflavin and folate),[8] mineral

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deficiencies (iron/zinc) and general protein malnutrition are also associated with angular cheilitis.[9]

Literature has shown the evidence that angular cheilitis may affect both genders. However, it may involve people of young to elderly age group. The gender difference in occurrence of AC has also been reported in different studies. Study conducted in Ahmedabad in India showed high predilection in females than males,[1] similar finding was also observed in Ritchie study.[9,10] The research has shown that angular cheilitis may occur between 2nd to eight decades of life.[6]

The treatment of angular cheilitis is depends on the underlying cause and should be treated accordingly. Antifungal ointment is prescribed if candida is observed.[10] It is emphasized that the dentist must know the exact etiopathogenesis and clinical presentation of angular cheilitis so that they can diagnose easily and provide treatment to their patient to improve the quality of life.[11] The aim of this study is to investigate the occurrence and etiological factors with respect to gender.

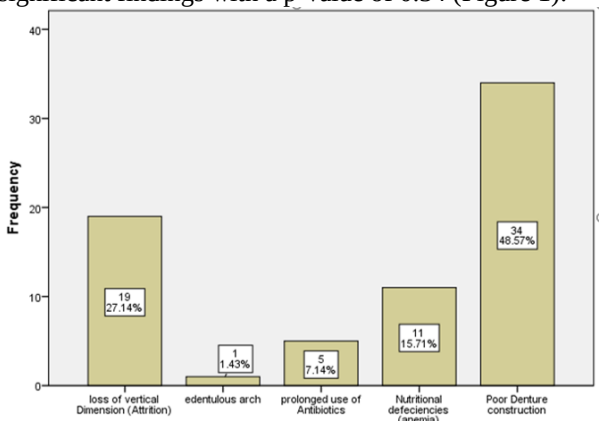
MATERIALS AND METHODS

This cross-sectional study was carried out in private dental clinics of Sindh Province from January 2019 to June 2020. A non-probability convenient sampling technique was used. The permission for data collection was obtained from the owners of private dental practice and an informed consent was also taken prior to oral examination of patients. A total of 70 diagnosed cases of angular cheilitis (AC) were participated in the study. The study included both male and female patients which were divided into three age groups (10- 30, 31-60, 61-90 years). Angular cheilitis was diagnosed on the basis of clinical presentation seen at the time of examination. The sign and symptoms include soreness, pruritis, swelling or cracking, pain, burning sensation, bleeding, ulceration and deep folds at the corner of the mouth.

The exclusion criteria included patients who refused to give consent. The data was recorded on a proforma and evaluated by Statistical Package for the Social Sciences (SPSS) version 23. To know the significance and frequency of angular cheilitis between genders and reasons were analyzed by using Chi-square test. P-value < 0.05 was considered significant.

RESULTS

A total number of 70 clinically diagnosed patients of angular cheilitis were included in this study, out of which 31(44.3%) were males and 39(55.7%) females. The Mean age was 63.07 and SD ±11.08. The minimum and maximum age reported was 38 and 88 years. The reasons for angular cheilitis was also investigated and correlation with gender, was also made which revealed that poor denture construction was the major etiological factor reported in both the genders 34 (48.57%). This was followed by loss of vertical dimensions or attrition 19 (27.14%) and nutritional deficiencies 11 (15.71%) whereas use of antibiotics reported 5 (7.14%) and edentulous arch reported only 1 (1.42%). The angular cheilitis is shown in figure 1. The cross-tabulation between reasons of AC and gender showed in significant findings with a p-value of 0.34 (Figure 1).



*Insignificant p-value 0.34

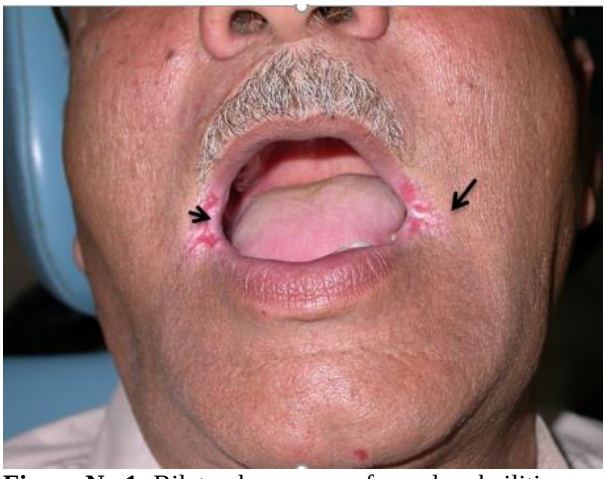


Figure No.1: Bilateral presence of angular cheilitis

DISCUSSION

Angular cheilitis is basically an unpleasant condition leading to cracks, fissuring, occasionally it may cause bleeding at the angle of mouth. The present study was aimed to investigate the occurrence of angular cheilitis among dental patients who visited different dental clinics. The term angular cheilosis, commissural cheilitis, angular stomatitis, are synonyms for angular cheilitis.[12]

Globally angular cheilitis may involve both the genders. The prevalence of angular cheilitis may vary from study to study in different parts of the world. A local study conducted in Pakistan among elderly population showed prevalence of AC ranging from 0.7 to 3.8% [13] whereas Kelly and colleagues[6] reported 0.2 to 15.1% in children. However, higher predilection was also

observed between 3rd to 6th decades of life. Thumb sucking, lip licking and biting corners of the lips are common factors, whereas sagging at the commissures of the mouth poses risks to AC in older patients.[11]

Literature has shown the evidence of deficiency of vitamin B, folic acid and iron as predisposing factors. Study by Shin revealed that anemia has been associated with angular cheilitis in as much as 11.3% to 31.8% of patients in different studies.**[14]** Present study results reflected nutritional deficiencies which were similar to Parlak study.[15] A Turkish study conducted in a Duzce Province in a western black sea showed 9% prevalence which was in accordance with present study findings.[15]

A clinical and microbiological study conducted by AP Dias on Southern Chinese patients highlighted that infective agents were isolated from 37(54%) samples of AC and growth of Candida and Staph: aureus was reported.[16]

Lugović-Mihić and colleagues states that AC was predominantly seen among diabetics and psychiatric patients. Furthermore, patients who used certain drug therapy (isotretinoin), and less frequently seen in primary hypervitaminosis.[17,18,19]

Studies conducted by Fox et al, Ohman and colleagues revealed that angular cheilitis was observed in 2^{nd} – 8^{th} decade of life.[20,21] In present study majority of patients were observed between 3^{rd} to 8^{th} decades of life. This was very close to Ohman study. Oza and Doshi demonstrated that the occurrence of AC was more common among females, this may be due to hormonal variation during pregnancy, menstruation, menopause and anemic condition.[1] The current study also supported Oza study findings. A case series on AC among COVID-19 patients found decrease of vertical dimension to be a major local factor.[22] Similarly, in current study, the loss of vertical dimension was the 2^{nd} most common etiological factor seen which also supported Abanoub Riad study.[22] Loss of vertical dimension was also observed in Anitha and colleagues study which was in accordance with our current study. Weight loss in some patients could cause loss of facial elastic tissue, skin turgor, and reduce the vertical dimension of the facial structures causes pooling and stasis of saliva at the commissures of the mouth and eventual maceration of the skin and mucosa.[23]

The diagnosis of AC can easily be made on clinical grounds. The treatment of AC depends on infectious and noninfectious etiology. For infectious type fungicidal medication should be applied at the labial commissures of lips thrice a day for 2 weeks period. Other medications include the use of Nystatin 100,000 units/mL ointment applied twice daily.[9] Ketoconazole 2% cream and Clotrimazole 1% cream can also be used. Miconazole 2% cream topically (with or without hydrocortisone 1%): Mixed staphylococcal and candidal infections respond best to this treatment. Topical antiseptics and antibiotics include: Fusidic acid 2% cream (with or without hydrocortisone 1%) applied QID topically as an antistaphylococcal regimen for AC.[9].

CONCLUSION

To conclude the angular cheilitis, present study findings can be attributed numerous local etiological factors such as poor denture construction, loss of vertical dimensions of prosthesis/jaws and nutritional deficiencies. In authors opinion a multicenter study should be conducted to further evaluate the etiological factors of angular cheilitis.

Author's Contribution:

Concept & Design of Study:	Daud Mirza
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Revisiting Critically:	Daud Mirza, Seema Naz Soomro
Final Approval of version:	Daud Mirza

Conflict of Interest: The study has no conflict of interest to declare by any author.

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