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ORIGINAL RESEARCH

Assessment Of Risk Factors Of Denture Stomatitis

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ABSTRACT

Background: Denture stomatitis (DS) is the clinical diagnosis of the disease that occurs in adults with removable dentures. The present study was conducted to assess risk factors of denture stomatitis.

Materials & Methods: 150 cases of complete denture wearer having denture stomatitis were diagnosed of DS based on DS-modified Newton's index (NI): 0 = no inflammation; 1 = pin-point hyperemia; 2 = diffuse erythema; and 3 = papillary hyperplasia) in the complete denture wearers. Denture hygiene and year of denture wearing was also recorded.

Results: Out of 150 patients, males were 90 and females were 60. Grading 0 was seen in 0%, 1 in 20%, 2 in 25% and 3 in 55%. The difference was significant (P< 0.05). Denture age was 1-5 years in 42%, 5-10 years in 23% and >10 years in 35%. Denture hygiene was good in 26%, satisfactory in 24% and poor in 50%. The difference was significant (P< 0.05).

Conclusion: Common risk factors for denture stomatitis were chronic denture wearing and poor oral hygiene.

Key words: Denture stomatitis, Denture age, Oedema

Introduction

Denture stomatitis (DS) is the clinical diagnosis of the disease that occurs in adults with removable dentures. Oedema and inflammation of the mucosa covered by denture base are objective signs of the disease. Subjective symptoms as pain, itching and burning sensation are described, but in most patients with DS are asymptomatic.[1] Systematic review of numerous observational and experimental studies analyzing an association between mucosal lesions and wearing of removable dentures has shown that the DS prevalence ranges from 1.1% to over 36.7%. Regardless of the large number of studies published, there are controversial conclusions in relation to DS prevalence which is mainly due to heterogeneity and variations in research methodology.[2]

The inflammatory changes are characterized mainly by erythema and are found under complete or partial dentures in both jaws, but more frequently in the maxilla. Lesions of the oral mucosa associated with wearing of removable dentures may represent acute or chronic reactions to microbial denture plaque, a reaction to constituents of the denture base material, or a mechanical denture injury.[3] Candida albicans has been shown to be the principal Candida strain responsible for inflammatory pathology, though various species of candida like C. dubliniensis, C. Parapsilosis, C. Krusei; C. Tropicalis and above all C. glabarta have been isolated from the inflammatory lesion.[3] The pathogenesis of candida– associated denture stomatitis is elaborate and multifactorial. C. albicans is a normal oral microorganism, and upto 67% of people carry this organism without clinical evidence of infection.[4]

Risk factors associated with oral candidiasis and DS are wearing complete dentures; wearing a maxillary (in contrast to a mandibular) removable denture; inadequate denture hygiene, nocturnal denture wearing; poor denture quality; diabetes mellitus; antibiotic therapy; immune deficiencies, vitamin A, folate, and iron deficiencies; impaired salivary gland function (20), xerogenic medication, tobacco use, salivary secretion rate and gender.[5] The present study was conducted to assess risk factors of denture stomatitis.

Materials & Methods

The present study comprised of 150 cases of denture stomatitis of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. were recorded. The diagnosis of DS was made based on DS-modified Newton's index (NI): 0 = no inflammation; 1 = pin-point hyperemia; 2 = diffuse erythema; and 3 = papillary hyperplasia) in the complete denture wearers. Denture hygeine and year of denture wearing was also recorded. Data thus obtained were clubbed together and were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 150		
Gender	**Males**	**Females**
Number	90	60

Table I shows that out of 150 patients, males were 90 and females were 60.

Table II Assessment of grading of denture stomatitis

Grading	Number	P value
0	0%	0.01
1	20%	
2	25%	
3	55%	

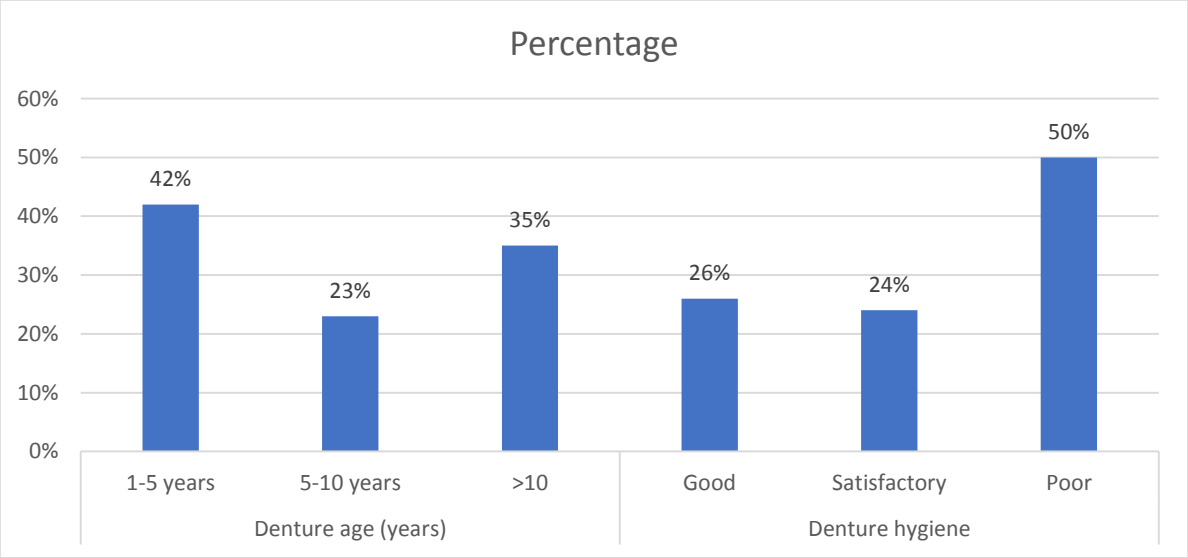
Table II shows that grading 0 was seen in 0%, 1 in 20%, 2 in 25% and 3 in 55%. The difference was significant (P< 0.05).

Table III Assessment of risk factors of DS

Variables	Parameters	Percentage	P value
Denture age (years)	1-5	42%	0.05
	5-10	23%	
	>10	35%	
Denture hygiene	Good	26%	0.17
	Satisfactory	24%	
	Poor	50%	

Table III, graph I shows that denture age was 1-5 years in 42%, 5-10 years in 23% and >10 years in 35%. Denture hygiene was good in 26%, satisfactory in 24% and poor in 50%. The difference was significant (P< 0.05).

Graph I Assessment of risk factors of DS



Discussion

Candida fungi are ubiquitous microorganisms and opportunistic pathogens commonly found in the oral cavity of asymptomatic individuals. In health and in a normal local environment the host's defence systems prevent overt infection.[6] There is some evidence that oral epithelial cells may present an innate defence response to Candida through the release of cathelicidins and defensins for topical defence. Oral epithelial cells from healthy donors are reported to inhibit growth of several Candida species with cell contact being a strict requirement.[7] The present study was conducted to assess risk factors of denture stomatitis.

We found that out of 150 patients, males were 90 and females were 60. Type two: a generalized inflammation characterized by a diffuse erythema of the mucosa covered by the denture.[8] Type three: an inflammatory papillary hyperplasia. Type two is the most common between the 3 types of DS. Predisposing factors to DS are usually divided into local and systemic. Diabetes mellitus and conditions of nutritional and immunity deficiencies are among the systemic factors.[9]

We observed that grading 0 was seen in 0%, 1 in 20%, 2 in 25% and 3 in 55%. Naik et al[10] in their study 100 patients aged 30 to 70 years were selected for the study. Among these, 70 patients were labelled test group showing signs of stomatitis and 30 patients as control group as they showed no inflammatory signs. Clinical tests included oral and denture hygiene evaluation, salivary measurements, and age of the dentures, and microscopic investigations were done. Results showed no significant differences between the two groups in terms of saliva, oral and denture hygiene habits, and denture age. Test group showed stomatitis in patients who were wearing dentures for 5 to 10 years compared to control group who were wearing dentures for 10 years and above.

We found that denture age was 1-5 years in 42%, 5-10 years in 23% and >10 years in 35%. Denture hygiene was good in 26%, satisfactory in 24% and poor in 50%. Numerous studies have been done in the past to study the causes of the disease, but the main cause has not been agreed upon. Studies have pronounced different factors causing denture stomatitis like traumatic occlusion, poor oral and denture hygiene, microbial factors, age of the denture, allergy to the denture base materials, residual monomer, thermal stoppage below the denture, smoking, various types of irradiation, dryness of mouth, systemic conditions, diabetes mellitus and immunodeficiency, nutritional deficiencies and medications. Plaque on the inner surface of the denture harbors microorganisms causing inflammation of the mucosa.[11,12]

Shulman et al[13] reported denture stomatitis (DS) prevalence. Oral examinations were performed on 3450 individuals 18–90+ years of age (mean: 59.2; SD: 0.50 years), 57.7% male and 42.3% female. Of 3450 removable denture wearers, 963 (27.9%) had DS. DS prevalence was associated with wearing maxillary (AOR: 6.20) and mandibular (AOR: 5.21) complete dentures continuously; smoking ‡15 cigarettes day (maxillary complete: AOR ¼ 1.31; mandibular complete: AOR ¼ 1.50; maxillary partial: AOR ¼ 2.04); vitamin A deficiency (mandibular complete: AOR ¼ 5.97; maxillary

partial: AOR ¼ 5.67; mandibular partial: AOR ¼ 24.42). Maxillary dentures with inadequate relines had approximately half the OR of DS than those with adequate relines (maxillary complete: AOR ¼ 0.42; mandibular complete: AOR ¼ 0.50).

Navabi et al[14] in their study a total of 70 edentulous patients, all wearing removable dentures, were divided into two groups. The test group comprised 43 patients with DS and the control group comprised 27 subjects with clinically healthy palatal mucosa. A thorough history-taking and physical examination were carried out; the subjects also answered a questionnaire. The serum level of vitamin A for each subject was assayed from a blood sample taken after the examination. This study showed a significant relationship between the incidence of DS and three major factors: denture age (in terms of years), the practitioner manufacturing the dentures (general dental practitioner versus dental hygienist), and the night-long wearing of dentures. Also, the vitamin A serum level was low in 94.29% of all subjects (cases and controls).

The limitation of present study is small sample size.

Conclusion

Authors found that common risk factors for denture stomatitis were chronic denture wearing and poor oral hygiene.

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