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Oral Symptoms and Oral Health Related Quality of Life in Patients with Grinspan's Syndrome: A Questionnaire Based Cross-Sectional Study

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Abstract

Introduction: Grinspan syndrome is a triad of erosive form of oral lichen planus (OLP), diabetes mellitus (DM) and arterial hypertension. The objective of present study is to evaluate the oral health and oral symptoms in patients with Grinspan's syndrome and also an emphasis on evaluating the level of awareness about oral health in patients of this disease complex. ***Methods:*** The study subjects with Grinspan's syndrome are included in the study while the rest were excluded along with those who are on medications for other conditions. A self-administered structured questionnaire is used as the survey instrument. After collecting all the responses from patients, it is analyzed statistically using IBM SPSS® Software (21.v). ***Results:*** The most common oral symptom found in Grinspan's syndrome is Glossodynia (92.1%). The high arched palate (35.6%) and temporomandibular joint disorders (35.6%) are least associated with this syndrome. Glossodynia was most prevalent (91.4% and 93% respectively) and their association with gender was highly significant (p value<.001) however the association of all other oral symptoms with gender was statistically non significant (P>.001). Among the different age groups, the presentation of oral symptoms was highly variable but the association between oral symptoms and age group was statistically highly significant (P<.001). ***Conclusions*:** Glossodynia is the most common oral symptom found in Grinspan's syndrome whereas high arched palate and temporomandibular joint disorders (35.6%) are the least associated with this syndrome, in our study. The presentation of oral symptoms depends on and varies according to the age group of patients.

Keywords: Grinspan Syndrome, Oral Lichen Planus, Diabetes, Hypertension.

INTRODUCTION

Oral lichen planus is one of the common chronic inflammatory, noninfectious diseases affecting mucosa of the oral cavity. It may be associated with several systemic diseases. An association that exists between the most severe forms of lichen planus- the erosive form, diabetes mellitus and arterial hypertension is called Grinspan syndrome [1]. It was reported by Grinspan and named by Grupper and Avil as "Grinspan Syndrome [2]." The oral lichenoid lesion in Grinspan syndrome may be a reaction to the drugs used to treat diabetes mellitus and/or hypertension. However the precise relationship is not clear.

It is suggested that prolonged hyperglycemia in diabetes can lead to exaggerated inflammatory and immune response, which can lead to more periodontal breakdown [3]. Evidence supports the formation of advanced glycation end products resulting in greater breakdown of collagen fibers and shows the accelerated destruction of bone leading to periodontitis [4]. Evidence also suggests poor blood pressure control in patients suffering from periodontitis [5]. Oral lichen planus with chronic periodontitis patients also show higher serum interleukin (IL)-17 expressions suggesting its role in the immunopathogenesis of both diseases. The aim of this study is to analyze the patients having Grinspan's disease on the basis of their signs and symptoms and their periodontal health [6].

Goyal et al. presented a case with the symptomatic triad fulfilling the diagnostic criteria of Grinspan syndrome [7]. A 50-year-old female with type 2 diabetes mellitus and vascular hypertension came with the chief complaint of bleeding gums and severe burning sensation of the oral cavity. Additionally, she had generalized alveolar bone loss and clinical

attachment loss. Intraoral examination revealed patches and white lacy lesion crossing each other on the buccal mucosa and tongue. Gingiva was red and exhibited bleeding on probing. Phadnis et al reported a case on Grinspan's syndrome, in a 48-year old female patient, with a variant of the classic symptomatic triad of diabetes mellitus, hypertension and oral lichen planus common in the elderly [8]. The definitive diagnosis of this condition is established by correlating the medical history and clinical examination along with histopathological interpretation of the lesion.

Kökten et al. reported oral lichen planus (OLP) as one of the common chronic inflammatory, noninfectious, and precancerous oral mucosal diseases that affect the stratified squamous epithelium in adults [9]. They presented a case of Grinspan's syndrome with malignant transformation. A 60-year-old man who presented with a ten-year history of OLP diagnosed clinically and histologically was referred to their department of otolaryngology, with a painless ulcer in the left buccal mucosa noted for three months. Clinical examination revealed several plaques, striated white lesions in the buccal mucosa bilaterally, and an exophytic tumor in the left buccal mucosa. Histopathological examination showed lichen planus bilaterally and oral squamous cell carcinoma in the left buccal mucosa. The tumor had developed on the preexisting (previously histologically proven) areas of lichen planus. After complete removal of the tumor, the tissue defect on the buccal mucosa was repaired with a split-thickness skin graft. Since oral health is highly compromised in Grinspan syndrome, observing the signs and symptoms of Grinspan's disease correctly and at an early stage leads to proper and quality treatment for perseverance of teeth and other oral structures. In context of above said facts this is the first study which is designed to evaluate the oral health status and awareness of patients with Grinspan's disease about their oral health.

MATERIALS AND METHODS

The present study has been conducted in Department of Oral Medicine from December 2019 to Feb 2020. This study has been approved by institutional ethical committee having reference code 100th ECM II A/P7,75/Ethics/2020 dated 11/02/2020. A total of 101 patients have been given a questionnaire prepared in popular languages i.e. Hindi and English. A self-administered structured questionnaire is used as the survey instrument. The prepared questionnaire is distributed to the patients who report to the outpatient department of Oral medicine. All patients have signed an informed consent agreement which is approved by the ethics committee review board. The answers of each question are categorized as yes or no depending on the observation. After collecting all the responses from patients it is analyzed statistically using @IBM, SPSS software (24.v). The study subjects having symptoms of Greenspan syndrome (Oral lichen planus, Diabetes, Hypertension and periodontal infection) is included in the study while rest is excluded along with those who are on medications.

RESULTS

Categorical variables were presented in number and percentage (%) and continuous variables were presented as mean ± SD and median. Qualitative variables were compared using Chi-Square test /Fisher's exact test as appropriate. A p value of <0.05 was considered statistically significant. The data was entered in MS EXCEL spreadsheet and analysis was done using Statistical Package for Social Sciences (SPSS) version 16.0.

The study population consisted of 101 patients having Grinspan's Syndrome. The study subjects having symptoms of Grinspan's syndrome (Oral lichen planus, diabetes, Hypertension and periodontal infection) were included in the study while the rest were excluded along with those who were on medications, for other conditions. In the study population the patients have age of 29 to 65 years or above. The mean age of occurrence for Grinspan's syndrome is 47.04+11.4 years (Table.1). The mean duration of occurrence of Grinspan's syndrome was 5.89 +2.6 years (Table.2). The study population consisted of 57.4% male population followed by 42.6% female population (Table.3). The study population was divided into 4 age groups. Most of this population was in the age group of 26-50 years of age (50.5%) followed by 51 - 65 years (25.7%),29-35 years (16.8%) and above 65 years(6.9%).(Table.3). In the study population, 38.6% patients were aware of Grinspan's syndrome i.e out of 101 subjects 39 study subjects knew about the Grinspan's syndrome.

The oral symptoms and oral health was assessed in study population. The most common oral symptom found in Grinspan's syndrome is glossodynia (92.1%) followed by tooth mobility (68.3%), oral candidiasis (59.4%), and halitosis (52.5%). However, tooth loss (47.5%), glossopyrosis (47.5%), and gingivitis (47.5%) have equal prevalence in Grinspan's syndrome. The presence of periodontitis (44.6%), anomaly of tooth formation (44.6%) and tooth shifting has also equal prevalence followed by dysgnathia (43.6%). High arched palate (35.6%) and temporomandibular joint disorders (35.6%) have also equal prevalence in Grinspan's syndrome (Table.4).

From above observations, it was concluded that glossodynia is most common oral symptom associated with Grinspans'syndrome while high arched palate and temporomandibular joint disorders are least associated with this syndrome. The frequency of oral symptoms has been compared in age groups using Fischer extract test and p-value has been estimated.

a. In the study subjects of age group 29-35 years, the oral symptoms like anomaly of tooth formation, temporomandibular disorders, high arched palate, dysgnathia, tooth shifting are more prevalent than glossodynia and tooth mobility however periodontitis, oral candidiasis, gingivitis, halitosis, tooth loss, and glossopyrosis is not found at all. The association between the oral symptoms as described above was statistically highly significant (P<.001). As such, it was concluded that occurrence of oral symptoms like anomaly of tooth formation, TMD, high arched palate, dysgnathia, tooth shifting was more common younger age group (Table.5).

b- In the study subjects of age group 36 - 50 years, the glossodynia (92.2%) was most common oral symptoms exhibited by study population however periodontitis was least common (23.5%). Other oral symptoms in this age group were found to be statistically highly significant (P<.001). The correlation between age group and glossodynia was statistically not significant (p<.05) however periodontitis was statistically highly significant (P<.001) (Table.5).

c. In the study subjects of age group 51-65 years, periodontitis, oral candidiasis, gingivitis, halitosis, tooth loss, tooth mobility, tooth shifting, glossodynia and glossopyrosis is most common (100%). All other oral symptoms are least common. However irrespective of their frequency of occurrence they are highly significantly related to age (P value<.001) (Table.5).

d. In the study subjects of age Above 65 years, periodontitis, oral candidiasis, gingivitis, halitosis, tooth loss, tooth mobility and glossodynia are most common and their co-relation with age was highly significant (p<.01). However all other oral symptoms have variable frequency of occurrence however they were also statistically highly significant (p<.01) (Table.5).

It was concluded that the presentation of oral symptoms depends on the age group of patients. It varies according to age of patients. In the age groups, the presentation of oral symptoms were highly variable and was different in different age groups but the association between oral symptoms and age group was statistically highly significant(P<.001).

Using the fisher exact test, the co-relation between gender and oral symptoms has been evaluated. It was observed that in male population 31% study subjects are well known about Grinspan's syndrome while in study population 48.8% of female are well worsened with Grinspan's syndrome (Table.6).

Both in male and female population, Glossodynia was most prevalent (91.4% and 93% respectively) and their association with gender was highly significant (p value<.001) however the association of all other oral symptoms with gender was statistically non significant (P>.001). In male population glossodynia was most commonly reported (91.4%) followed by tooth mobility (74.1%), oral candidiasis (56.9%), halitosis (50%), periodontitis (46.6%),tooth loss (48.3%), anomaly of tooth formation and tooth shifting (44.8%), glossopyrosis and gingivitis(43.1%), dysgnathia (39.7%), TMD and high arched palate(36.2%) (Table.6).

However in female population, glossodynia is most common (93%) followed by oral candidiasis (62.8%), tooth mobility (60.5%), halitosis (55.8%), gingivitis and glossopyrosis (53.5%), dysgnathia (48.8%), tooth loss (46.5%), anomaly of tooth formation and tooth shifting (44.2%), periodontitis (41.9%), temporomandibular disorders and high arched palate (34.9%) (Table.6).

Table-1: Showing mean age of occurrence of Grinspan's syndrome

	Mean	Standard Deviation	Median	Minimum	Maximum
Age	47.04	11.41	45.00	29.00	77.00

Table-2: Showing the duration of occurrence of Grinspan's Syndrome

	Mean	Standard Deviation	Median
Duration (in years)	5.89	2.67	6.00

Table-3: Showing the distribution of age and sex in study population

		N	%
Age intervals	29 - 35 years	17	16.8%
	36 - 50 years	51	50.5%
	51 - 65 years	26	25.7%
	Above 65 years	7	6.9%
	Subtotal	101	100.0%
Sex	Male	58	57.4%
	Female	43	42.6%
	Subtotal	101	100.0%

Table-4: Showing the prevalence of oral health and oral symptoms in Grinspan's Syndrome

Oral signs and symptoms		N	%
"Ever Heard Of Grinspan Syndrome"	yes	39	38.6%
	No	62	61.4%
Periodontitis	Absent	56	55.4%
	Present	45	44.6%
Oral Candiasis	Absent	41	40.6%
	Present	60	59.4%
Anomaly of Tooth Formation	Absent	56	55.4%
	Present	45	44.6%
TMD	Absent	65	64.4%
	Present	36	35.6%
High Arched Palate	Absent	65	64.4%
	Present	36	35.6%
Dysgnathia	Absent	57	56.4%
	Present	44	43.6%
Gingivitis	Absent	53	52.5%
	Present	48	47.5%
Halitosis	Absent	48	47.5%
	Present	53	52.5%
Tooth Loss	Absent	53	52.5%
	Present	48	47.5%
Tooth Mobility	Absent	32	31.7%
	Present	69	68.3%
Tooth Shifting	Absent	56	55.4%
	Present	45	44.6%
Glossdynia	Absent	8	7.9%
	Present	93	92.1%
Glossopyrosis	Absent	53	52.5%
	Present	48	47.5%

(Applied chi square test)

Table-5: Showing the age wise distribution of oral health and oral symptoms in Grinspan's Syndrome and their co-relations

		Age intervals								p-value
Oral signs and symptoms		**29 - 35 years**		**36 - 50 years**		**51 - 65 years**		**Above 65 years**		
		N	%	N	%	N	%	N	%	
"Ever Heard Of Grinspan Syndrome"	yes	13	76.5%	17	33.3%	6	23.1%	3	42.9%	**0.004**
	No	4	23.5%	34	66.7%	20	76.9%	4	57.1%	
Periodontitis	Absent	17	100.0%	39	76.5%	0	.0%	0	.0%	**<0.001**
	Present	0	.0%	12	23.5%	26	100.0%	7	100.0%	
Oral Candiasis	Absent	17	100.0%	24	47.1%	0	.0%	0	.0%	**<0.001**
	Present	0	.0%	27	52.9%	26	100.0%	7	100.0%	
Anamoly of Tooth Formation	Absent	0	.0%	23	45.1%	26	100.0%	7	100.0%	**<0.001**
	Present	17	100.0%	28	54.9%	0	.0%	0	.0%	
TMD	Absent	0	.0%	32	62.7%	26	100.0%	7	100.0%	**<0.001**
	Present	17	100.0%	19	37.3%	0	.0%	0	.0%	
High Arched Palate	Absent	0	.0%	32	62.7%	26	100.0%	7	100.0%	**<0.001**
	Present	17	100.0%	19	37.3%	0	.0%	0	.0%	
Dysgnathia	Absent	0	.0%	24	47.1%	26	100.0%	7	100.0%	**<0.001**
	Present	17	100.0%	27	52.9%	0	.0%	0	.0%	
Gingivitis	Absent	17	100.0%	36	70.6%	0	.0%	0	.0%	**<0.001**
	Present	0	.0%	15	29.4%	26	100.0%	7	100.0%	
Halitosis	Absent	17	100.0%	31	60.8%	0	.0%	0	.0%	**<0.001**
	Present	0	.0%	20	39.2%	26	100.0%	7	100.0%	
Tooth Loss	Absent	17	100.0%	36	70.6%	0	.0%	0	.0%	**<0.001**

	Present	0	.0%	15	29.4%	26	100.0%	7	100.0%	
Tooth Mobility	Absent	10	58.8%	22	43.1%	0	.0%	0	.0%	**<0.001**
	Present	7	41.2%	29	56.9%	26	100.0%	7	100.0%	
Tooth Shifting	Absent	0	.0%	23	45.1%	26	100.0%	7	100.0%	**<0.001**
	Present	17	100.0%	28	54.9%	0	.0%	0	.0%	
Glossdynia	Absent	4	23.5%	4	7.8%	0	.0%	0	.0%	**0.036**
	Present	13	76.5%	47	92.2%	26	100.0%	7	100.0%	
Glossopyrosis	Absent	17	100.0%	36	70.6%	0	.0%	0	.0%	**<0.001**
	Present	0	.0%	15	29.4%	26	100.0%	7	100.0%	

Table-6: Showing the gender wise distribution of oral health and oral symptoms in Grinspan's Syndrome and their co-relations with male and female population

		Sex				**p-value**
Oral signs and symptoms		**Male**		**Female**		
		N	%	N	%	
"Ever Heard Of Grinspan Syndrome"	yes	18	31.0%	21	48.8%	0.069
	No	40	69.0%	22	51.2%	
Periodontitis	Absent	31	53.4%	25	58.1%	0.639
	Present	27	46.6%	18	41.9%	
Oral Candiasis	Absent	25	43.1%	16	37.2%	0.551
	Present	33	56.9%	27	62.8%	
Anamoly of Tooth Formation	Absent	32	55.2%	24	55.8%	0.949
	Present	26	44.8%	19	44.2%	
TMD	Absent	37	63.8%	28	65.1%	0.891
	Present	21	36.2%	15	34.9%	
High Arched Palate	Absent	37	63.8%	28	65.1%	0.891
	Present	21	36.2%	15	34.9%	
Dysgnathia	Absent	35	60.3%	22	51.2%	0.357
	Present	23	39.7%	21	48.8%	
Gingivitis	Absent	33	56.9%	20	46.5%	0.301
	Present	25	43.1%	23	53.5%	
Halitosis	Absent	29	50.0%	19	44.2%	0.583
	Present	29	50.0%	24	55.8%	
Tooth Loss	Absent	30	51.7%	23	53.5%	0.861
	Present	28	48.3%	20	46.5%	
Tooth Mobility	Absent	15	25.9%	17	39.5%	0.144
	Present	43	74.1%	26	60.5%	
Tooth Shifting	Absent	32	55.2%	24	55.8%	0.949
	Present	26	44.8%	19	44.2%	
Glossdynia	Absent	5	8.6%	3	7.0%	1.000[#]
	Present	53	91.4%	40	93.0%	
Glossopyrosis	Absent	33	56.9%	20	46.5%	0.301
	Present	25	43.1%	23	53.5%	

(Applied fisher exact test)

DISCUSSION

Oral lichen planus may be coupled with many other diseases, out of which its rarest association is with hypertension and diabetes mellitus which is an erosive form known as Grinspan's syndrome. This rare association is still under studies and yet to be known. Therefore, it can be said that Grinspan's syndrome is a triad of three known conditions i.e. arterial hypertension, OLP, and DM.

Table 1 depicts the mean age (47.04 ±11.4) for occurrence of this syndrome while table 2 shows the duration in years of this condition while table 3 reveals the distribution of ages in which, out of the total population, 50.5 % in age group 36-50 year were more affected. A study in favor was reported by Phadnis et al. in which they presented a case report of a 48-year old female patient having medical history of DM (15 years and hypertension (12 years) on examination it was observed that she had generalized diffused gingival lesion [10]. the biopsy of the excisional lesion confirmed that the lesion was OLP. With all these condition they clinically diagnosed it as Grinspan's syndrome. Similarly, Lamey et al. in 1990 reported a

case study of 3 female patients of different age groups diagnosed with Grinspan's syndrome [11].

Although in our study we noted a male preponderance, yet a contrasting experience was noted by Gowhar et al., in whose study female diabetic patients were more prone to OLP which increases the chances of having Grinspan's syndrome [12].

Table 4-6 depicted the prevalence, age wise distribution and gender wise distribution of oral health or oral symptoms in Grinspan's syndrome. The prevalence of OLP in a general population is about 05-2% all over the world and common in females. 61.4% of patients were unaware of Grinspan's syndrome. 44.6% of patients were diagnosed with the symptoms of bleeding gums and inflammation in oral cavity along with hypertension and DM similar to the case study reported by Goyal et al. in which a 60-year old patient had periodontitis and Grinspan's syndrome along with generalized bone loss [13].

Fuoad et al. conducted a hospital based questionnaire study in Ajman UAE in patients with DM [14]. A total of 404 patients with DM were selected out of which 60.65% patients were found with halitosis as one of the symptoms and 64.5 % were found with Candida infection while the majority of subjects had no periodontitis.

CONCLUSIONS

In our experience, glossodynia is the most common oral symptom associated with Grinspan's syndrome while high arched palate and temporomandibular joint disorders are least associated with this syndrome. The association between oral symptoms and age group was highly statistically significant. However, in gender based analysis of Grinspan's syndrome, glossodynia was the most prevalent oral symptoms among both male and female study population.

Conflict of Interests

The authors declare no potential conflicts of interest with respect to research, authorship and/or publication of this article.

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REFERENCES

1. Grinspan, D., Diaz, J., Abulafia, J., Villapol, L., Schneiderman, J., Palese, D., & Berdichesky, R. (1966, October). Our experience with lichen ruber planus of the buccal mucosa. In Annales de Dermatologie et de Syphiligraphie (Vol. 93, No. 5, pp. 531-542).
2. Grupper, C.H., Avril, J. (1965). Lichen Erosive Buccal, Diabetes, Hypertension (sindrome de grinspan). Bull Soc Franc Derm Syph, 72; 721–2
3. Gupta, N., Gupta, N. D., Garg, S., Goyal, L., Gupta, A., Khan, S., & Moin, S. (2016). The effect of type 2 diabetes mellitus and smoking on periodontal parameters and salivary matrix metalloproteinase-8 levels. Journal of oral science, 58(1), 1-6.
4. Preshaw, P. M., Alba, A. L., Herrera, D., Jepsen, S., Konstantinidis, A., Makrilakis, K., & Taylor, R. (2012). Periodontitis and diabetes: a two-way relationship. Diabetologia, 55(1), 21-31.
5. Rivas- Tumanyan, S., Campos, M., Zevallos, J. C., & Joshipura, K. J. (2013). Periodontal disease, hypertension, and blood pressure among older adults in Puerto Rico. Journal of periodontology, 84(2), 203-211.
6. Wang, H., Luo, Z., Lei, L., Sun, Z., Zhou, M., Dan, H., & Chen, Q. (2013). Interaction between oral lichen planus and chronic periodontitis with Th17-associated cytokines in serum. Inflammation, 36(3), 696-704.
7. Goyal, L., Gupta, N. D., & Gupta, N. (2018). Grinspan syndrome with periodontitis: Coincidence or correlation?. Journal of Indian Society of Periodontology, 22(3), 263.
8. Phadnis, R. G., Lata, K., Vishwas, K., & Pallavi, A. (2018). Grinspan's syndrome. Indian Journal of Oral Health and Research, 4(1), 31.
9. Kökten, N., Uzun, L., Karadağ, A. S., Zenginkinet, T., & Kalcıoğlu, M. T. (2018). Grinspan's Syndrome: A Rare Case with Malignant Transformation. Case reports in otolaryngology, 2018.
10. Phadnis, R. G., Lata, K., Vishwas, K., & Pallavi, A. (2018). Grinspan's syndrome. Indian Journal of Oral Health and Research, 4(1), 31.
11. Lamey, P. J., Gibson, J., Barclay, S. C., & Miller, S. (1990). Grinspan's syndrome: a drug-induced phenomenon?. Oral surgery, oral medicine, oral pathology, 70(2), 184-185.
12. Gowhar, O., Tasneem, S., Ain, Sultan, S. (2019). Prevalence of oral lichen planus: a hospital based study. Internat Jour of Contemp Med Res, 6(5); E8-E10
13. Goyal, L., Gupta, N. D., & Gupta, N. (2018). Grinspan syndrome with periodontitis: Coincidence or correlation?. Journal of Indian Society of Periodontology, 22(3), 263.
14. Sura, A. A., Ibrahim, S. A. Z. M., & Prathibhaprasad, J. M. (2015). Frequency and Pattern of Oral Manifestations and Oral Hygiene Practices among Cases with Diabetes Mellitus in Ajman, United Arab Emirates. International Journal, 3(2A), 4-9.