Original Article

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Evaluation of the Association between Advanced Periodontal Diseases and Gastrointestinal Problems and Influence of Oral Hygiene on This Association in Kermanshah Dental School

Torkzaban, P.* Khandan, MR. Mohammadi, V.*****

*Associate Professor, Member of Dental Research Center, Dept. of Periodontics, Dental Faculty, Hamadan University of Medical Sciences, Hamadan, Iran .

**Assistant Professor, Dept. of Periodontics, Dental Faculty, Kermanshah University of Medical Sciences, Kermanshah, Iran.

***Dental Student, Dental Faculty, Hamadan University of Medical Sciences, Hamadan, Iran.

ABSTRACT

Statement of the Problem: Some studies reveal that the oral cavity acts as a potential reservoir for *H. pylori* or a possible route of transmission. The aim of this study was to evaluate the association between advanced periodontal diseases and gastrointestinal problems and the effect of oral hygiene on this relationship.

Materials and Methods: This descriptive cross-sectional study was carried out on 71 patients with advanced periodontal disease, referring to Kermanshah Dental School. History of any systemic disease (non-gastrointestinal), alcohol consumption, smoking, addiction and diabetes was considered as exclusion criteria. Patients were divided into two groups: non-gastrointestinal problems and gastrointestinal problems (regurgitation, swelling and peptic ulcers). In addition, these groups were subdivided into three subgroups: no tooth brushing, and brushing once and twice a day. Statistical analysis was carried out using chi-squared and Fisher's exact tests. Statistical significance was defined at $P<0.05$.

Results: There were 42 patients (59.1%) with gastrointestinal problems. The statistical difference between advanced periodontal diseases and gastrointestinal problems in patients was significant ($P<0.05$). 81.1% of patients not brushing daily, 68.9% brushing once a day and 13.3% brushing twice a day had gastrointestinal problems, with statistically significant differences ($P<0.05$).

Conclusion: This study revealed that patients with advanced periodontal disease have also more gastrointestinal disorders and tooth brushing twice a day significantly decreased gastrointestinal problems in patients.

Keywords: Advanced periodontal diseases, gastrointestinal problems, Oral Hygiene

INTRODUCTION

Helicobacter pylori is a microaerophilic bacterium measuring about 3 μm in length and 0.5 μm in diameter, with 4–6 flagella and it is strongly associated with antral gastritis, duodenal ulcers, gastric adenocarcinoma and MALT lymphoma.[1] About half of the world's population is infected with H. pylori[2] and the oral-oral and fecal-oral modes of transmission have been postulated.[3] Viable H. pylori has been isolated from feces,[4] saliva,[3] dental plaque[5] and various oral lesions.[6] It is an

Corresponding Author: P.Torkzaban Address: Dept. of Periodontics, Dental Faculty, Hamadan University of Medical Sciences, Fahmideh Blvd, Hamadan, Iran. Tel: +98 811 8381081 Email: E-mail: ptorkzaban@gmail.com

important gastrointestinal pathogen associated with gastritis, peptic ulcers and increased risk of gastric carcinoma.[7] However, the transmission and the source of this infection are still unclear.

The failure of triple therapy or quadruple therapy to clear H. pylori infection from the dental plaque, despite its clearance from the gastric mucosa,[3] has raised the possibility that dental plaque is the potential source of re-infection of gastric mucosa. The detection of this microorganism in the oral cavity has been reported by several groups,[8,9] who have demonstrated that the oral cavity acts as a potential reservoir for *H. pylori* or a possible route of transmission. Periodontal treatment in combination with systemic therapy, has exhibited the successful eradication of gastric *H. pylori* as compared to systemic therapy alone, with the decreased risk of re-infection.[10]

Gebara et al[11] provided evidence that patients with periodontal disease show a high prevalence (43%) of *H. pylori* in their dental plaque. In addition, Umeda et al[12] showed that 41.2% of patients who harbored *H. pylori* in the stomach or duodenum had periodontal pockets more than 4 mm in depth. Dye et al[13] in a survey of 4504 participants concluded that periodontal pockets with a depth of 5 mm or more are associated with increased odds of *H. pylori* seropositivity.

However, investigators such as Annand et al, Chitsazi et al and Kamat et al reported that there was no correlation between periodontal disease and *H. pylori* infection.[14–16] The aim of this study was to evaluate the association between advanced periodontal diseases and gastrointestinal problems and the effect of oral hygiene on this relationship.

MATERIALS AND METHODS

Seventy-one patients with advanced periodontal disease, referring to Kermanshah Dental School (Kermanshah, west of Iran), between July 2009 and June 2012, were studied. Of these 71 patients in this descriptive cross-sectional study, 51 were males and 20 were females, with a mean age of 42 years. History of any systemic disease (except for gastrointestinal problems), alcohol consumption, smoking, addiction and diabetes was considered as exclusion criteria. A standard questionnaire was designed and all the subjects received explanations about the research and informed consent was obtained from each just before they entered the study.

In this questionnaire, the patients were asked about regurgitation of stomach and digestive system problems, pain, swelling or ulcers. In addition, questions were asked about tooth brushing habits, i.e. frequency of tooth brushing each day. Accordingly, patients were divided into two groups: non-gastrointestinal problems and gastrointestinal problems (regurgitation, swelling and peptic ulcers). Furthermore, these groups were subdivided into three groups: no tooth brushing, and tooth

brushing once and twice a day. Statistical analysis was carried out using descriptive statistics, the chi-squared test and Fisher's exact test. Statistical significance was set at P<0.05.

RESULTS

There were 42 patients (59.1%) with gastrointestinal problems and 29 patients (40.9%) without gastrointestinal problems. The statistical difference between advanced periodontal diseases and gastrointestinal problems in patients was significant (P<0.01) (Figure 1).

81.1% of patients who did not brush, 68.9% of patients with brushing once a day and 13.3% of patients with brushing twice a day had gastrointestinal problems (Figure 2).

The relationship between gastrointestinal problems and daily tooth brushing was significant (P<0.05) (Table 1).

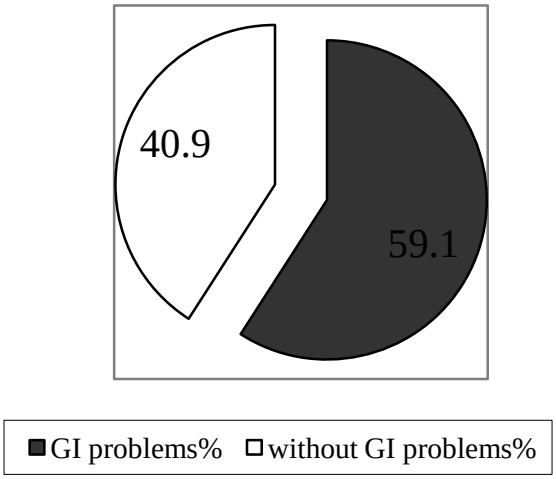

Figure 1. The frequency of gastrointestinal problems in patients with advanced periodontal problems.

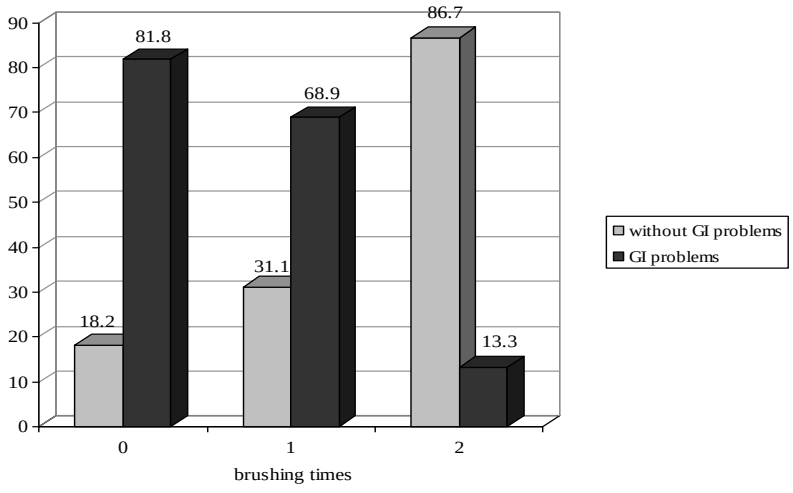

Figure 2. The frequency (%) of gastrointestinal problems in patients and toothbrushing times (daily).

Table 1. The association between oral hygiene (toothbrushing times daily) with GI problems

	Toothbrushing times (daily)			P
	0	1	2	
GI problems	9	31	2	.000
Without GI problems	2	14	13	
Total	11	45	15	
		71		

DISCUSSION

The oral cavity acts as a potential reservoir for *H. pylori* or a possible route of transmission. The aim of this study was to evaluate the association between advanced periodontal diseases and gastrointestinal problems and the effect of oral hygiene (tooth brushing) on this relationship.

This study indicated that 59.1% of patients with advanced periodontal diseases had gastrointestinal problems ($P<0.05$), consistent with previous reports.[11–13]

81.1% of patients who did not brush, 68.9% of patients with brushing once a day and 13.3% of patients with brushing twice a day had gastrointestinal problems. In addition, the statistical difference between patients who had gastrointestinal problems and daily brushing was significant ($P<0.05$). The results of studies by Siddiq et al, Riggio et al and Zaric indicate that the oral cavity acts as a potential infection source for *H. pylori* or a possible route of transmission.[6.8.10] Therefore, oral hygiene (tooth brushing) might decrease oral infection (*H. pylori*), resulting in a decrease in gastrointestinal problems.

Further studies into the association between advanced periodontal diseases and gastrointestinal problems are still essential needs.

CONCLUSION

This study revealed that patients with advanced periodontal disease are also more susceptible to gastrointestinal disorders and brushing twice a day might significantly decrease digestive system problems in patients.

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