

A Clinicopathologic Study of Oral Changes in Gastroesophageal Reflux Disease, Gastritis, and Ulcerative Colitis

¹E Vinesh, ²KMK Masthan, ³M Sathish Kumar, ⁴S Marytresa Jeyapriya, ⁵Aravindh Babu, ⁶Meera Thinakaran

ABSTRACT

Objectives: The aim and objectives of this study are to identify oral changes in certain gastrointestinal (GI) diseases, namely gastroesophageal reflux disease (GERD), ulcerative colitis, gastritis, and to evaluate these oral symptoms as indicators for assessing GI disorders.

Materials and methods: In this study, the oral manifestations of various GI disorders were assessed in a varying age group of 250 patients in Government Stanley Medical College and Hospital, Chennai. Out of 250 patients, 142 were affected by GERD, 99 were affected by gastritis, and 9 patients were affected by ulcerative colitis. Of these patients, 177 were males and 73 were females.

Results: Evaluation of patients with gastritis revealed that 66.7% affected with gingivitis, 19.2% with dental erosion on the palatal and lingual aspects of maxillary and mandibular teeth predominantly in the anterior region, 10.1% with periodontitis, 2% with gingival erythema. Among the patients with GERD, 44% of the cases showed dental erosion, 25.5% periodontitis, 9.9% gingivitis, 5.7% gingival erythema, 2.8% palatal erythema, 2.1% gingival ulcers, glossitis 2%, 1.4% floor of the mouth erythema, and 0.7% erythema of the tongue. Patients with ulcerative colitis showed 44.4% of gingival erythema, 33.3% of dental erosions, and 22.2% of gingival ulcers and periodontitis.

Conclusion: In our study of 250 patients, oral manifestations were observed in 88% of the patients. Both soft tissue and hard tissue changes were evident. There was a high correlation

between various GI disease and dental erosion, erythema at various sites of the oral cavity, oral ulcers, gingivitis, periodontitis, and glossitis. Careful evaluation of oral cavity may unveil many GI disorders and help the patient by providing early diagnosis, which further facilitates the prognosis.

Keywords: Gastritis, Gastroesophageal reflux disease, Oral manifestations of gastrointestinal disorders, Ulcerative colitis.

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INTRODUCTION

The oral cavity, lined by stratified squamous epithelium, is the portal of entry to the gastrointestinal (GI) tract, and as a consequence, it is often involved in conditions that affect the GI tract.¹

Gastrointestinal diseases manifest as lesions within the jaws, oral mucosa, or perioral tissues. These lesions are directly caused by GI diseases or at times, by systemic alterations secondary to GI diseases.²

Gastroesophageal reflux disease (GERD) is defined as a "condition that develops when the reflux of stomach contents causes troublesome symptoms and/or complications."³ The common symptoms of GERD include heartburn, regurgitation, and dysphagia.⁴ Oral manifestations of GERD include dental erosion, dental caries, xerostomia, burning sensation, halitosis, and erythema of the palatal mucosa and uvula.⁵

Ulcerative colitis is a type of inflammatory bowel disease that primarily affects the colonic mucosa. Initial symptoms include diarrhea with blood and mucus, fever, and weight loss.⁶ Oral manifestations include aphthous ulceration and pyostomatitis vegetans.⁷

^{1,3,4}Department of Oral Pathology, Karpaga Vinayaga Institute of Dental Sciences, Kanchipuram, Tamil Nadu, India

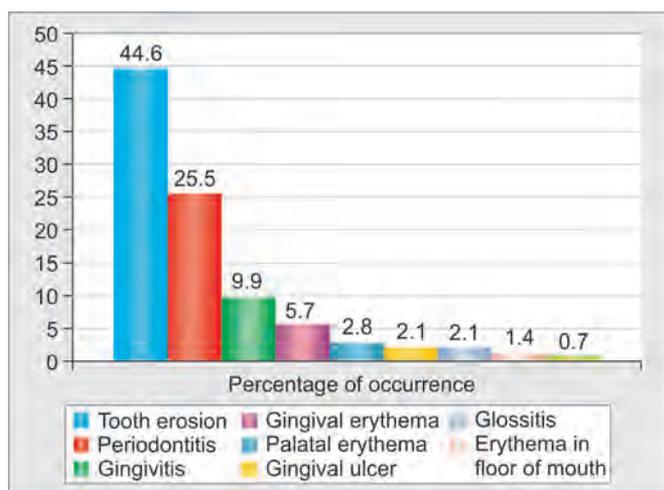
^{2,5}Department of Oral Pathology, Sree Balaji Dental College and Hospital, Chennai, Tamil Nadu, India

⁶Department of Oral and Maxillofacial Surgery, Karpaga Vinayaga Institute of Dental Sciences, Kanchipuram, Tamil Nadu, India

Corresponding Author: Vinesh E, Department of Oral Pathology Karpaga Vinayaga Institute of Dental Sciences, Kanchipuram Tamil Nadu, India, e-mail: vineshezhil@gmail.com

Table 1: Oral manifestations in patients with GERD

Oral manifestations	No. of patients (Frequency)	% of occurrence
Tooth erosion	63	44.6
Periodontitis	36	25.5
Gingivitis	14	9.9
Gingival erythema	8	5.7
Palatal erythema	4	2.8
Gingival ulcers	3	2.1
Glossitis	3	2.1
Erythema in floor of the mouth	2	1.4
Tongue erythema	1	0.7



Graph 1: Occurrence of oral manifestations in GERD

The purpose of this study is to show that oral cavity is a mirror that reflects the underlying GI diseases and also to prove that mouth could be the mirror of various GI diseases. The aim and objectives of this study are to identify oral changes in certain GI diseases, namely GERD, ulcerative colitis, gastritis, and to evaluate these oral symptoms as indicators for assessing GI disorders.

MATERIALS AND METHODS

In this study, the oral manifestations of various GI disorders were assessed in a varying age group of 250 patients in Government Stanley Medical College and Hospital, Chennai.

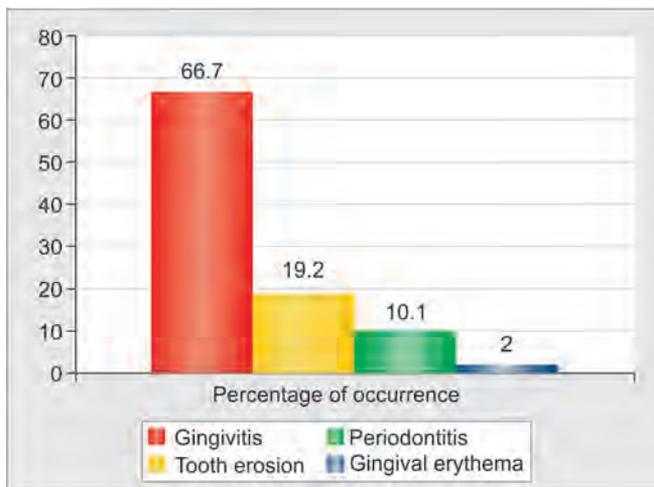
Out of 250 patients, 142 were affected by GERD, 99 were affected by gastritis, and 9 patients were affected by ulcerative colitis. Of these patients, 177 were males and 73 were females.

RESULTS

As shown in Table 1, the classical intraoral finding in 142 patients (99 males and 43 females) affected by GERD was dental erosion in 63 patients (44.6%). The next common finding was periodontitis in 36 patients (25.5%). This was

Table 2: Oral manifestations in patients with gastritis

Oral manifestations	No. of patients (Frequency)	% of occurrence
Gingivitis	66	66.7
Tooth erosion	19	19.2
Periodontitis	10	10.1
Gingival erythema	2	2



Graph 2: Occurrence of oral manifestations in gastritis

followed by gingivitis in 14 patients (9.9%). Eight (5.7%), 4 (2.8%), 3 (2.1%), 3 (2.1%), 2 (1.4%), and 1 (0.7%) were the numbers of patients affected by gingival erythema, palatal erythema, gingival ulcer, glossitis, floor of the mouth erythema, and tongue erythema respectively. Eight patients did not show any oral manifestations (Graph 1).

As shown in Table 2, the classical intraoral finding in 99 patients (70 males and 29 females) affected by gastritis was gingivitis in 66 patients (66.7%) followed by dental erosion in 19 patients (19.2%), and periodontitis in 10 patients (10.1%) (Graph 2).

As shown in Table 3, the classical intraoral finding in 9 patients (8 males and 1 female) affected by ulcerative colitis was gingival erythema in 4 patients (44.4%), this was followed by dental erosion in 3 patients (33.3%). Gingival ulcer and periodontitis were seen in 2 patients each (22.2%) (Graph 3).

DISCUSSION

The oral cavity is an important anatomical location where many critical physiologic processes, such as digestion, respiration, and speech, take place. The oral cavity is frequently involved by conditions that affect multiple organs of the body. Anatomically and functionally, the oral cavity represents the beginning of the GI tract. The disease processes affecting the GI tract may cause observable changes in the oral cavity and sometimes, oral involvement precedes the GI symptoms.¹

In our study of 250 patients, various GI conditions like gastritis, GERD, and ulcerative colitis were evaluated for

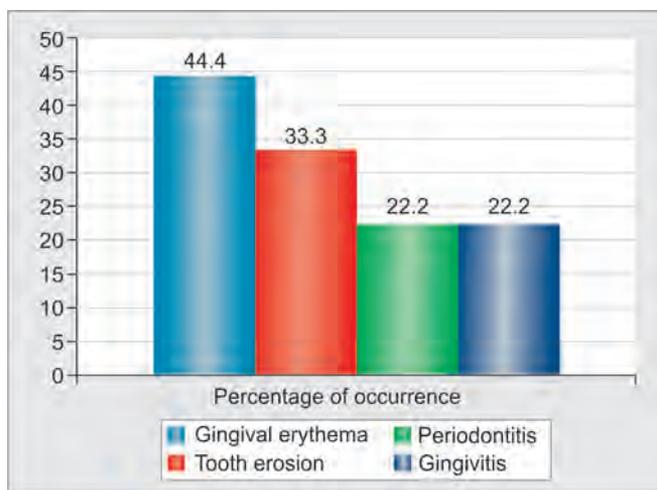


Table 3: Oral manifestations in patients with ulcerative colitis

Oral manifestations	No. of patients (Frequency)	% of occurrence
Gingival erythema	4	44.4
Tooth erosion	3	33.3
Periodontitis	2	22.2
Gingival ulcers	2	22.2

its oral manifestations. Among the study population, 88% of the patients showed oral symptoms, such as dental erosions, erythema, periodontitis, gingivitis, gingival ulcers, and glossitis.

Evaluation of patients with gastritis revealed 66.7% affected with gingivitis, 19.2% with dental erosion on the palatal and lingual aspects of maxillary and mandibular teeth predominantly in the anterior region, 10.1% with periodontitis, 2% with gingival erythema. Dye et al⁸ and Al Asqah et al⁹ in their study showed *Helicobacter pylori* bacteria present in periodontal lesions of the gastritis patients, which play a major role in the pathogenesis of the disease. Their study highlights the association of periodontitis with



Graph 3: Occurrence of oral manifestations in ulcerative colitis

gastritis which correlates with our study. However, there are not many studies in the literature regarding the other oral manifestations of gastritis, like dental erosion, which our study attempts to establish it (Figs 1 to 6).

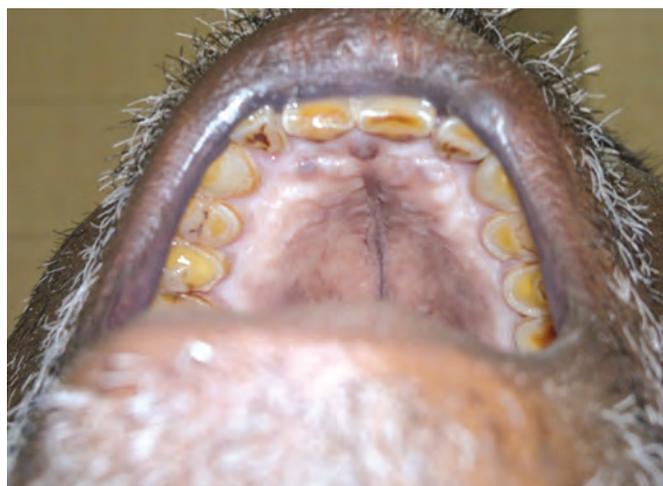


Fig. 1: Maxillary dental erosions



Fig. 2: Gingival ulcers and periodontitis



Fig. 3: Gingivitis



Fig. 4: Gingival erythema



Fig. 5: Palatal erythema



Fig. 6: Erythema of soft palate

Among the patients with GERD, 44% of the cases showed dental erosion, 25.5% periodontitis, 9.9% gingivitis, 5.7% gingival erythema, 2.8% palatal erythema, 2.1% gingival ulcers, glossitis 2%, 1.4% floor of the mouth erythema, and 0.7% erythema of the tongue. The relationship between GERD and dental erosion correlated with the study by Schroeder et al¹⁰ and Barron et al.¹¹

Fan-Hsu in his study had mentioned that crucial examination of the patient with dental erosion may reveal silent GERD, thereby he strongly supports the association between dental erosion and GERD.¹² Daley et al² in their review suggested that enamel erosion is caused by gastric acids in gastric reflux patients and the erosion is mostly seen on the broad areas of the teeth. Although Huber in his review had recorded the occurrence of oral ulcers and glossitis,¹³ the significance of other oral findings in our study was not supported by any literature.

Patients with ulcerative colitis showed 44.4% of gingival erythema, 33.3% of dental erosions, 22.2% of gingival ulcers and periodontitis. Similar findings have been reported by Schroeder who demonstrated 10 out of 12 ulcerative colitis patients with significant dental erosion.¹⁴ Trost and McDonnell¹⁵ highlighted that oral ulcers in colitis disease were seen especially localized to gingiva and floor of the mouth. Galbraith et al¹⁶ proved that oral ulcerations were definitive manifestations of ulcerative colitis and these ulcers were mostly found in the gingiva. Van Dyke et al¹⁷ isolated microorganisms, such as *Wolinella* and *Campylobacter* from patients with inflammatory bowel disease and from the associated periodontal lesions, thereby they proved that these microorganisms, colonizing in the periodontal lesions of the ulcerative colitis patients, play a major role in the pathogenesis of the disease. Thus they justify the relationship between periodontitis and ulcerative colitis. Katz et al¹⁸ in their study of oral signs and symptoms of ulcerative colitis, patients with active disease showed oral ulcerations. Jose et al¹⁹ in his article suggested that oral ulcers were seen in 5 to 10% of patients

affected by ulcerative colitis. Franch et al²⁰ suggested that oral manifestations of ulcerative colitis may manifest as aphthous ulcers.

Earlier observations by various authors include dental erosions, periodontitis, erythema, aphthous ulcers, glossitis, etc. The overall findings in our study suggest that dental erosion and erythema were the most prominent oral manifestations followed by periodontitis, gingivitis, gingival ulcers, and glossitis.

In the present study, 88% of the patients with GI disturbance had one or other form of oral manifestations. So, on most occasions, the oral findings may serve as a clue or act as a valuable guide for the diagnosis of GI disorders.

CONCLUSION

In our study of 250 patients, oral manifestations were observed in 88% of the patients. Both soft tissue and hard tissue changes were evident. There was a high correlation between various GI disease and dental erosion, erythema at various sites of the oral cavity, oral ulcers, gingivitis, periodontitis, and glossitis.

Careful evaluation of oral cavity may unveil many GI disorders and help the patient by providing early diagnosis, which further facilitates the prognosis.

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