Prevalence of Oral Manifestations of Inflammatory Bowel Disease in Patients Admitted to Sulaymaniyah teaching hospital – Iraq

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ABSTRACT

The aim of this study is to evaluate the association between IBD and oral symptom and mucosal lesions in patients with Crohn's disease and ulcerative colitis

Methods: This is a cross-sectional study that has been done in (Kurdistan center for Gastroenterology and hepatology) of Teaching Hospital in Sulaymaniyah-Iraq, which included 101 patients previously diagnosed with Inflammatory Bowel Disease who were interviewed regarding manifestations of inflammatory bowel disease especially oral manifestations. Required data were collected through a specially designed questionnaire,

Results: The patients' mean age was 45.74±12.58 years. Patients with ulcerative colitis and Crohn's disease were not significantly different in terms of age, sex, smoking, and drinking alcohol ($p>0.05$), and it was seen that age groups 41-50 and 51-60, males, smokers, and drinkers were more affected by these two diseases. They were not significantly different in terms of chief complaint, drug history, oral hygiene, and disease duration ($p>0.05$). Most of the patients (78 out of 101) had fair or poor oral hygiene. The two groups of the patients were not significantly different in terms of oral manifestations and symptoms ($p>0.05$). The most common oral manifestations were found to be respectively angular cheilitis, aphthous ulcer, and diffuse lip swelling in both diseases. The most common symptoms were respectively dry mouth and halitosis.

Conclusion: This study revealed that dentists and oral and maxillofacial Medicine could involve in a diagnosis of IBD, by at least in the referral process, because patients in clinical setting may give a history of orofacial complaints giving a hint on possible systemic background of IBD

Keywords: inflammatory bowel diseases (IBD), ulcerative colitis (UC), Crohn's disease (CD), aphthous stomatitis, oral mucosal lesion

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Introduction

Inflammatory bowel disease (IBD) has been reported to have remarkable impact on various locations of the digestive tract [1]. It is not yet known what mechanisms are behind this disease. Moreover, since the end of the past century, there was a rise in its incidence, as a result of public health has been adversely affected [2].The most widely-reported presentations of IBD are Crohn's disease (CD) and ulcerative colitis (UC) [3]. Both presentations have been reported to be associated with chronic intestinal- and extra intestinal inflammations which are likely to be due to the fact that intestinal microbiota causes an abnormal immunological reaction or the susceptible individuals come up with other stimuli [4, 5]. Other characteristics of IBD include association with periods of remission and relapse and broad kinds of manifestations at intestinal and extra-intestinal locations [3, 6, 7]. As indicated, the patient had at least one extra-intestinal manifestation, oral cavity being the most affected area, has been reported in 25% to 30% of patients suffering from IBD [6, 7, 8]. It has been stated that associated oral lesions, such as affections of the mucosa, are a significant initial indication of IBD or at least as concomitant manifestations whereby the diagnosis might be facilitated [3, 9].

Generally speaking, the literature provides descriptions of oral mucosal lesions, which might be related to either patients with UC or CD and may be specific or nonspecific to these pathologies [9, 7, 10]. However, IBD patients have been reported with a broad variety of pathological characteristics [11, 12]. In addition, patients with IBD have been reported with a remarkable prevalence of other oral symptoms, such as xerostomia and halitosis [12].

The aim of this study was to evaluate the association between IBD and oral mucosal lesions and symptoms.

Methods

The study was conducted in Kurdistan center for Gastroenterology and hepatology of teaching hospital in Sulaimaniyah-Iraq from1st December 2018 to 1st August 2019.The study included one hundred one patients who were previously diagnosed with ulcerative colitis(44 patients) and Crohn's disease (57 patients) according to world Gastroenterology Organization Global Guidelines [13]. Informed consent was obtained from all participants; required data were collected using a specifically designed questionnaire which included age, gender, patient medical history, and medication.

Exclusion criteria were patients under 18 years old, pregnant women, edentulous patients, patients with fixed orthodontic appliances, and patients with other diseases that could interfere with the variables in the study. Dental and oral assessment of lip, labial mucosa and sulci, commissures, buccal mucosa and sulci, gingiva, tongue, floor of mouth, hard and soft palate under artificial light using mouth mirror and tongue depressor were performed and finding were recorded. Data entered and statistical analysis was performed using SPSS software 24th edition. Chi-square test was used for analyzing variables.

Results

One hundred and one patients with inflammatory bowel disease were examined, of whom 45 (44.6%) were females and 56 (55.6%) were males.

The minimum and maximum ages were 20 and 73 years, respectively.

The age 44 patients with ulcerative colitis 5 (38.5%) were ≥61 years, and 13 (50.0%) were between 51-60 years. Regarding their gender, 27 patients 48.2 %) were males and 17 (37.8%) were females. Also, 26 of them (42.6%) did not smoke, 18 (45 %) smoked, 13 (43.3%) were drinkers, and 40 (56.4%) were non-drinkers (See Table 1)

The age of the 56 patients with Crohn's disease 8 (61.5%) were ≥61 years, and 20 (50.0%) were between 51-60 years. Regarding their gender, 29 (51.8%) were males, and 28 (62.2%) were females. Also, 35 (47.5%) of them did not smoke, 22 (55%) smoked, 17 (56.7%) were drinkers, and 40 (56.4%) were not drinkers as shown in (Table 1). As indicated in Table 1, there was no significant difference between the patients with ulcerative colitis and Crohn's disease in terms of their sociodemographic characteristics. Therefore, the two groups of the patients were homogeneous, and sociodemographic had no association with IBD.

Table 1. Association between sociodemographic variables and IBD

		IBD		Total	P-value
		Ulcerative colitis	Crohn's disease		
Age	≤30	7(46.7)	8(53.3)	15(100)	0.79
	31 – 40	8(50.0)	8(50.0)	16(100)	
	41 – 50	11(35.5)	20(64.5)	31(100)	
	51 – 60	13(50.0)	13(50.0)	26(100)	
	≥61	5(38.5)	8(61.5)	13(100)	
Sex	Female	17(37.8)	28(62.2)	45(100)	0.29
	Male	27(48.2)	29(51.8)	56(100)	
Smoking	Smoker	18(45)	22(55)	40(100)	0.814
	Non-smoker	26(42.6)	35(47.5)	61(100)	
Alcohol	Drinker	13(43.3)	17(56.7)	30(100)	0.976
	Non-Drinker	31(43.6)	40(56.4)	71(100)	
Total		44(43.6)	57(56.4)	101	

In ulcerative colitis, the most frequent complaint was found to be blood in stool 21(47.7%). Regarding their drug history, 40 (44.4%) of the patients were taking Mesalazine and Azathioprine. In terms of their oral hygiene, 23 (43.4%) had fair oral hygiene, it was good in 12 (52.2%) of them and poor in 9 (36%). With regard to disease duration, 20 (39.2%) of them had it for 1-30 months, 20 (54.1%) for 31-60 months, 3 (37.5%) for 61-90 months, and 1 (20%) for 91 or more months (as shown in Table 2).

In Crohn's disease, the most frequent complaint was found to be blood in stool with abdominal pain and weight loss 27 (58.7%). Regarding their drug history, it was observed that 50 (55.6%) of them took Mesalazine and Azathioprine. With regard to oral hygiene, 30 (56.6%) had fair oral hygiene, it was poor in 16 (64%) and good in 11 (47.8%). In terms of disease duration, 31 (60.8%) of them had it for 1-30 months, 4 (80%) for 91 or more months (See Table 2).

As shown in Table 2, patients with ulcerative colitis and Crohn's disease were not significantly different in terms of their chief complaint ((p=0.34); therefore, these two diseases are associated with similar complaints. Also, they were not significantly different in terms of drug history (p=0.75), oral hygiene (p=0.53), and disease duration (p=0.39).

Table (2) The association between clinical characteristics and IBD

		IBD			
		Ulcerative colitis	Crohn's disease	Total	P-value
Chief complaint	Blood in stool	21(47.7)	23(52.3)	44(100.0)	0.34
	Abdominal pain	2(75.0)	1(25.0)	3(100.0)	
	Blood in stool, weight loss & abdominal pain	19(41.3)	27(58.7)	46(100.0)	
	Blood in stool & Abdominal pain	2(25.0)	6(75.0)	8(100.0)	
Total		44(43.6)	57(56.4)	101(100.0)	
Drug history	Mesalazine	4(36.4)	7(63.6)	11(100.0)	0.75
	Mesalazine & azathioprine	40(44.4)	50(55.6)	90(100.0)	
Total		44(43.6)	57(56.4)	101(100.0)	
Oral hygiene	Good	12(52.2)	11(47.8)	23(100.0)	0.53
	Fair	23(43.4)	30(56.6)	53(100.0)	
	Poor	9(36.0)	16(64.0)	25(100.0)	
Total		44(43.6)	57(56.4)	101(100.0)	
Duration of disease	1 – 30	20(39.2)	31(60.8)	51(100.0)	0.39
	31 – 60	20(54.1)	17(45.9)	37(100.0)	
	61 – 90	3(37.5)	5(62.5)	8(100.0)	

	≥ 91	1(20.0)	4(80.0)	5(100.0)	
Total		44(43.6)	57(56.4)	101(100.0)	

The results of the present study revealed that there was no significant difference between patients with ulcerative colitis and Crohn's disease regarding their oral manifestation, including aphthous ulcer (p=0.594), angular cheilitis **(**p=0.750**),** diffuse labial swelling (p=0.437) as shown in (table 3). As seen in this table, (24 patients) with ulcerative colitis (42.1%) did not have any oral manifestation, 8 (47.1%) had angular cheilitis, 6 (37.5%) had Aphthous ulcer and 6 had (54.5%) diffuse labial swelling. Moreover, 33 patients with Crohn's disease (57.9%) did not have any oral manifestation, 10 (62.5%) had aphthous ulcer, 9 (52.9 %) had angular cheilitis, and 5 (45.5 %) had diffuse labial swelling.

Table (3) Oral manifestation in patients with ulcerative and Crohn's disease

	Ulcerative colitis	**Crohn's disease**	**P value**	**Total**
Aphthous ulcer	6(37.5)	10(62.5)	0.594	16(100.0)
Diffuse Lip swelling	6(54.5)	5(45.5)	0.437*	11(100.0)
Non	24(42.1)	33(57.9)	0.736	57(100.0)
Angular cheilitis	8(47.1)	9(52.9)	0.750	17(100.0)
Total	44(43.6)	57(56.4)		101(100.0)

According to the results of the current study, there was no significant difference between patients with ulcerative colitis and Crohn's disease in terms of their oral symptoms like halitosis (p=0.570), dry mouth (p=0.638), acid taste (p=0.357), halitosis and dry mouth (p=0.679), and halitosis and acid taste (p=0.403) (Table 4).

As indicated in (table 4), 12 patients with ulcerative colitis (40%) have dry mouth, 10 (40%) had dry mouth and halitosis, 8 (53.3%) had no symptom, 8 (38.1%) had halitosis, 4 (57.1%) had acid taste, and 2 (66.7%) had halitosis and acid taste. Also, 18 patients with Crohn's disease (60%) had dry mouth, 15 (60%) had halitosis and dry mouth, 13 (61.9%) had halitosis, 7 (46.7%) had no symptom, 3 (42.9%) had acid taste, and 1 (33.3%) had halitosis and acid taste.

Table(4) Associated oral symptoms with ulcerative and Crohn's disease

Associated symptoms	**Ulcerative colitis**	**Crohn's disease**	**P value**	**Total**
Halitosis	8(38.1)	13(61.9)	0.570	21(100.0)
Dry mouth	12(40.0)	18(60.0)	0.638	30(100.0)
Acid taste	4(57.1)	3(42.9)	0.357*	7(100.0)
Halitosis & dry mouth	10(40.0)	15(60.0)	0.679	25(100.0)
Non	8(53.3)	7(46.7)	0.408	15(100.0)
Halitosis & acid taste	2(66.7)	1(33.3)	0.403*	3(100.0)
Total	44(43.6)	57(56.4)		101(100.0)

Discussion

The present study was carried out on 101 patients with inflammatory bowel disease (IBD). The results indicated that ulcerative colitis (UC) was more prevalent among patients aged 51-60 years, followed by the age group 41-50 years. While Crohn's disease (CD) was more prevalent among patients belonging to the age group 41-50 years, followed by those aged 51-60 years. Similarly, Nimmons et al. (2016) [(14),] as older may have less compliance, overlapping other medical condition may lead to delay diagnosis and treatment [(15)]

With regard to gender distribution of IBD, the results of this study showed that men were more affected than women (56% vs. 45%). However, research has revealed that men and women are

affected by IBD equally [16]. It was also seen that ulcerative colitis was more common among men than women. This finding is in line with some studies which indicated that men are more frequently affected by UC than women [16, 17]. Crohn's disease was slightly more common in men than in women. In this regard, Law and Li (2014) conducted a retrospective cohort study and reported that CD is more frequently seen in women than men [18]. This discrepancy can be related to the limited sample size in the present study.

As revealed by the results of the present study, patients with UC and CD were not significantly different in terms of their age, sex, smoking, or drinking alcohol (p-value>0.05). Therefore, it can be stated that none of the mentioned variables were risk factors for UC and CD. Similar to this finding, Virta and Kolho (2014) concluded that inflammatory bowel disease does not correlate with age [19]. Moreover, Shah et al. (2018) reported that sex a significant risk factor for CD, in female exposure to estrogen following puberty may play a role in the development of CD. [20].

According to the results, most patients with UC did not smoke or drink. Also, patients with UC and CD were not significantly different in terms of smoking or drinking (p-value>0.05). In this regard, Bastida and Beltrán (2011) concluded that smoking has a protective effect on UC, such that current sm okers are less affected by this disease because nicotine may suppress your immune system, decrease the inflammation of ulcerative colitis, and boost production of the mucus in the colon that acts as a protective barrier. Also, nitric oxide, a chemical released by nicotine, may help calm intestinal spasms that trigger the urge to have a bowel movement by reducing muscle activity in the colon. They further explained that after the onset of UC, current smoking improves the course of the disease and reduces the need for colectomy [21]. Moreover, drinking alcohol has been referred to as an established risk factor for inflammatory bowel disease [22, 23]. Also, research has indicated that drinking increases the odds of developing CD [24]. Alcohol also affect the oral mucosa can by destroy the lipid composition that the protective layer of oral mucosa covers acanthosis granules, and disrupt the normal order of epithelial lipid molecules, resulting in a gap between epithelial cells and increasing oral mucosal permeability. In other words, alcohol opens a pathway for deep soft tissues [25]

The results also showed that chief complaints that are associated with UC and CD are blood in stool and blood in stool along with weight loss and abdominal pain, and the two groups of the patients (i.e. patients with UC and CD) were not significantly in this regard, which means that both types of IBD are associated with similar complaints. This finding is in line with previously conducted studies which reported that bloody stool is the most frequent complaint in patient with UC. Moreover, blood in stool along with weight loss and abdominal pain has been reported as the most frequent complaint in patients with Crohn's disease [26, 27].

Mesalazine and azathioprine were found as the most frequently drug consumed by patients with UC and CD, and the two groups were not significantly different in this regard (p>0.05). In line with this finding, Travis et al. (2008) indicated that mesalazine is beneficial for treatment of CD and UC; however, its effect is limited when it is consumed alone; therefore, they recommended its consumption along with other drugs, such as azathioprine [28]. Moreover, low doses of azathioprine have been reported to be effective for active Crohn's disease [29] and ulcerative colitis [30].

The results of the current study also indicated that the patients with UC and CD were not significantly different with regard to their oral hygiene, which shows that oral hygiene has the same significance as a probable risk factor for both UC and CD. In this regard, the results showed that more than half of the patients (53 out of 101) had fair oral hygiene, and 25 had poor oral hygiene. Similar to this finding, Singhal et al. (2011) reported that oral hygiene practices might lead to alternations in the flora of the oral mucosa, which causes imbalance in the gut microbiome (dysbiosis), which in turn leads to the pathogenesis of IBD. They also stated that most patients with IBD have dental problems which are most likely due to alternations in oral flora and some people with IBD suffer from stomach acid/bile coming up into their mouths. Acid is bad for teeth cause the enamel eroding. An acidic mouth is also the perfect host for plaque (bacteria which can cause

gum disease) and gingivitis (inflammation of the gums) [31]

As revealed by the results of the study, the patients with UC and CD were not significantly different in terms of disease duration. Out of 101 patients, 51 had their disease for 1-30 months and 37 for 31-60 months. With regard to disease duration, Cong et al. (2020) stated that shorter disease duration is associated with increased risk of treatment failure in biologic-treated patients with UC. This association, as they pointed out, can be affected by other factors, such as smoking, opportunistic infection, and anti-TNF antibodies [32].

The present study was carried out in order to figure out the oral symptoms and oral manifestation that are associated with ulcerative colitis and Crohn's disease and their correlation with the IBD. It was observed that both types of IBD (i.e. ulcerative colitis and Crohn's disease) are associated with similar oral symptoms and oral manifestations, and there was no significant difference between them in this regard. In regard oral manifestation, 57% did not have any oral manifestation, 17% had angular cheilitis, 16% had aphthous ulcer, and 11% had diffuse labial swelling. This finding is in good agreement with those reported by the previously conducted studies [33, 34].

The observed oral symptoms were halitosis, dry mouth, and acid taste. Similar to this finding, Elahi et al. (2012) in their study on oral manifestations of ulcerative colitis (UC) reported that UC is associated with dry mouth, taste change, acidic taste, halitosis, [35]. Also in line with this finding of the present study, Kumar et al. (2018) indicated that patients with Crohn's disease and ulcerative colitis undergo similar symptoms like dry mouth, altered taste, halitosis, and oral ulceration [36] ,some drug that used in treatment of IBD such as mesalazine have some side effect such as dry mouth and altered taste . In both UC and CD, the most common symptoms were respectively dry mouth, halitosis along with dry mouth, and halitosis. These finding is in agreement with those of previously conducted studies [36, 37, 38].

Conclusion

Ulcerative colitis and Crohn's disease are associated with similar oral manifestations, including angular cheilitis, aphthous ulcer, and diffuse lip swelling, and oral symptoms including dry mouth, halitosis and acid taste.

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