A clinical, endoscopic and histopathological study for upper gastrointestinal findings in adult Egyptian patients with ulcerative colitis

Omar R. Elwakil[a], Waleed A. Hamed[a], Ola H. Nada[b], Ethar M. Badran[a]

Departments of [a]Tropical Medicine, [b]Pathology, Faculty of Medicine, Ain Shams University, Cairo, Egypt

Correspondence to Omar R. Elwakil, MSc, Department of Tropical Medicine, Ain Shams University, Cairo 11835, Egypt. Tel: +20 1112411196; e-mail: emp14.omar.m.elwakil@gmail.com

Received: 22 September 2024
Revised: 17 November 2024
Accepted: 18 November 2024
Published: 27 January 2025

Egyptian Pharmaceutical Journal 2025, 24:141–151

Background
Ulcerative colitis (UC) is a type of chronic inflammatory bowel disease in the colon that is still of unknown aetiology. What is known, till now, is that UC is confined to the colon starting at the rectum and extending proximally for a variable distance till reaching the cecum, and despite UC is known to have various extracolonic presentations, the upper gastrointestinal tract (UGIT) is not generally considered as a target organ.
Aim
The current study aimed to describe UGIT clinical, endoscopic, and histopathological findings in adult Egyptian patients with UC.
Patients and methods
The study was conducted on 56 UC patients. In the Tropical Medicine Department Faculty of Medicine, Ain Shams University. All the patients were subjected to full history taking and thorough clinical examination. UGIT endoscopy was performed on all patients to study the endoscopic findings in the oesophagus, stomach, and duodenum and to take biopsies for histopathological examination.
Results
The current study has shown that 60.7% of patients had gastroesophageal reflux disease upon esophagogastroduodenoscopy while microscopic evaluation of oesophageal biopsies showed that 50% of the cases were having esophagitis. Regarding gastroduodenal affection, UGIT endoscopy revealed that 91.1% of the patients had gastritis and 78.6% had duodenitis, histopathological examination of the biopsy samples revealed that 53.6% of the cases had chronic nonspecific gastritis, 33.9% of the cases showed chronic gastritis with helicobacter pylori infection and 85.7% had chronic nonspecific duodenitis. The present study showed that UGIT affection was diagnosed collectively in 96.4 and 87.5% of the cases by endoscopy and biopsy, respectively.
Conclusion
The current study has proved the association between UC and the presence of endoscopic findings in the oesophagus, stomach, and duodenum. These findings were confirmed by histopathological examination of mucosal biopsies taken from the oesophagus, stomach, and duodenum.

Keywords:
duodenitis, gastritis, inflammatory bowel disease, oesophagitis, ulcerative colitis, upper gastrointestinal tract

Egypt Pharmaceut J 24:141–151

1687-4315

Introduction

Ulcerative colitis (UC) is a type of chronic inflammatory bowel disease in the colon that is still of unknown aetiology. It is known till now that UC is confined to the colon starting at the rectum and extending proximally for a variable distance till reaching the cecum, and despite UC is known to have various extracolonic presentations, the upper gastrointestinal tract (UGIT) is not generally considered as a target organ. Generally, UGIT affection in inflammatory bowel disease cases is thought to be due to Crohn's disease (CD), furthermore, UGIT affection in a case of indeterminate colitis makes the diagnosis in favour of CD [1]. This clinical concept has been questioned by many research work describing gastroduodenal lesions in adult patients with UC [2]. For example, stomach and duodenal involvement in UC patients studied macroscopically and microscopically by several research groups was termed as 'gastroduodenitis associated with UC', 'ulcerative gastroduodenal lesions' or 'UC-associated upper gastrointestinal inflammation' [3].

DOI: 10.21608/epj.2025.407379

The challenging problem is that the data presented are still of nonspecific pattern as absence of granulomatous reaction as a pathognomonic finding like in CD. Moreover, other differential diagnoses causing inflammation in UGIT are yet to be excluded [2].

The data collected about upper gastrointestinal (UGI) manifestations in UC is still limited compared with CD [4].

When treating UC, UGIT involvement may be overlooked because of the lack of recognition of the possible gastroduodenal affection. Consequently, esophagogastroduodenoscopy (EGD) would not be indicated as no criteria suggesting UC-associated upper gastrointestinal inflammation have been established to indicate which patients should undergo EGD. Patients with UC-associated upper gastrointestinal inflammation might need adding-on specific treatment for such lesions. So, studying and recognizing the UGIT lesions are important [5].

Oesophageal affection was mentioned in UC cases in some case reports [4]. Gastritis is reported as the most common manifestation of UGIT in UC, with endoscopic lesions detected in up to 8% and histologic changes in approximately a third of the patients [2]. The reported duodenitis is 3–10% in adult UC patients and to be noted, UC related gastritis, as well as duodenitis were more observed in patients with severe colonic UC, usually with a pancolitis phenotype that required colectomy [6].

The objective of this work is to study UGIT clinical, endoscopic, and histopathological findings in adult patients with UC and to find out if there is any relation between such UGIT findings and the present UC disease.

Patients and methods

Patients

This study is a descriptive cross–sectional study. The study was conducted on 56 UC patients. The study was conducted in the Tropical Medicine Department Faculty of Medicine, Ain Shams University over a period of 1 year starting in August 2023.

Inclusion criteria were fulfilled in case of recruited patients were male or female patients above 18 years old, patients who have UC as proved by colonoscopy and histopathological diagnosis, and patients who signed informed consent. Exclusion criteria included patients under 18 years old, patients who refused to sign an informed consent, and patients having severe co-morbidities as exacerbation of chronic obstructive pulmonary disease, end-stage renal disease, decompensated chronic liver disease, decompensated heart failure, and patients with a confirmed diagnosis of CD.

Clinical and laboratory evaluation methods

All included patients were subjected to clinical assessment with detailed history taking stressing on upper and lower GIT complaints, medication history, disease progression and history of disease-related surgical interventions. A thorough clinical examination was done on all patients. Laboratory studies including complete blood count, ESR, and C-reactive protein were done.

Endoscopy evaluation methods

UGIT endoscopy and colonoscopy for macroscopic assessment of the mucosa with biopsies taken from the colon and the UGIT. UGIT endoscopy examination was done for all patients included in the study by pentax (EG-3490K) video endoscope machine. Colonoscopy examination was done for all patients included in the study by pentax (EC-3490LK) video endoscope machine.

Histopathological evaluation methods

Regarding tissue samples processing, tissue collection was achieved from admitted patients for endoscopic intervention. Consequently, a histopathological evaluation of collected specimens was done. Samples were fixed in formalin and processed in an automated tissue processor (thermo scientific excelsior) in 14 h run. Tissue was then embedded in blocks of paraffin wax. Tissue staining procedure was done by using a microtome, sections 4–5 μm thick were cut from formalin-fixed paraffin-embedded tissue blocks and subjected to H&E staining as follows: sections were placed in a 60°C oven for 60 min before staining to allow for fixation of tissue on the slide. Slides were deparaffinized in xylene (2 changes, 10 min each). Rehydration was performed by placing the slides in descending grades of alcohol (absolute ethanol for 5 min, 90% ethanol for 5 min, and 70% ethanol for 5 min). The slides were then rinsed in distilled water for 2 min. Staining with hematoxylin was done for 2 min followed by washing in running tap water until the sections were blue. Staining with eosin was then done for 1 min. Slides were then dipped in 90% ethanol once, then transferred to absolute alcohol (2 changes 2 min each). Finally, the sections were cleared in 2 changes of xylene (5 min each), mounted using Canada balsam, and covered with clean glass slide covers. Finally histopathological assessment was done by light microscopy for histopathological

diagnosis, exclusion of non-UC cases as well as grading of activity and type of inflammation.

Evaluating ulcerative colitis activity

All patients included were evaluated regarding their UC severity at the time of the endoscopy by the Mayo score endoscopy severity as below (7).

Normal or inactive disease = 0.

Mild disease (erythema, decreased vascular pattern, mild friability) =1.

Moderate disease (marked erythema, absent vascular pattern, friability, erosions) =2.

Severe disease (spontaneous bleeding, ulceration) =3.

Score interpretation: The higher the score, the more severe the case of UC, the highest score possible is 12. Scores should be compared with previous scores taken from the same patient.

A score of the disease activity during endoscopy ranging from 1 being mild to 3 being severe was presented in the results [7].

Statistical evaluation methods

Statistical methods for data analysis: analysis of data was done using SPSS program version 27 (IBM SPSS Statistics, Armonk, New York, United States). Quantitative data were presented using minimum, maximum, mean, and SD. Qualitative data were presented using count and percentage. Student *T* test was used to quantitate data between two independent group. χ^2 and Fisher exact tests were used to compare qualitative data between different groups. *P* value less than or equal to 0.05 was considered statistically significant.

Results

Fifty-six patients were recruited in the current study and analysis was done as follows:

Table 1 shows that the age range was 19–65 years with a mean of 36.4 years, most of the patients (85.7%) are living in rural areas, in addition, more than half of the patients (58.9%) work in a stressful occupation and most of the patients (83.9%) have no special habits.

Table 2 presents the endoscopic findings in the study cases. UGIT endoscopy revealed the presence of esophagitis and/or gastroesophageal reflux disease (GERD) in (60.7%), gastritis in (91.1%) and duodenitis in (78.6%) of the cases, respectively. On the other hand, a colonoscopy revealed that the extent of UC in the study cases were pancolitis, left-side colitis, and proctosigmoiditis in (36.4%), (52.7%), and (10.9%) of cases, respectively. Colonic mucosa ulcerations were found in (83.9%), colonic pseudo-polyps in (42.9%), and loss of normal vascular pattern of colonic mucosa in (60.7%) of cases, respectively.

Table 3 shows that there is a statistically significant relation between UGIT symptoms and disease extent

Table 1 Personal history of the study patients (*N*=56)

	Minimum	Maximum	Mean	SD
Age (years)	19.00	65.00	36.64	10.88
		N (%)		
Sex				
Male		30 (53.6)		
Female		26 (46.4)		
Residence				
Urban		8 (14.3)		
Rural		48 (85.7)		
Occupation				
Stressful occupation		33 (58.9)		
Non-stressful occupation		10 (17.9)		
Not working		13 (23.2)		
Special habits mainly (smoking)				
No		47 (83.9)		
Yes		9 (16.1)		

Table 2 Endoscopy results in cases of the study (*N*=56)

Upper GIT endoscopy findings	*N* (%)
Findings in esophagus	
Free	22 (39.3)
Esophagitis/GERD	34 (60.7)
Findings in stomach	
Free	5 (8.9)
Gastritis	51 (91.1)
Findings in duodenum	
Free	12 (21.4)
Duodenitis	44 (78.6)
Colonoscopy Findings	
Extent of UC in colonoscopy	
Pancolitis	20 (36.4)
Left sided colitis	29 (52.7)
Proctosigmoiditis	6 (10.9)
Colonic mucosa ulcerations	
No	9 (16.1)
Yes	47 (83.9)
Colonic pseudo polyps	
No	32 (57.1)
Yes	24 (42.9)
Loss of normal vascular pattern of colonic mucosa	
No	22 (39.3)
Yes	34 (60.7)

Table 3 Relation between upper gastrointestinal tract symptoms and disease extent in colonoscopy

	Upper GIT symptoms			
	Yes (*N*=26) *N* (%)	No (*N*=29) *N* (%)	X^{2*}	*P* value
Extent in colonoscopy				
Pancolitis	15 (75.0)	5 (25.0)		
Left-sided colitis	9 (31.0)	20 (69.0)	9.62 FE**	0.01
Proctosigmoiditis	2 (33.3)	4 (66.7)		

*Chi square test,**FE: Fisher Exact test.

Table 4 Relation between upper gastrointestinal tract findings in pathology and colonic disease activity by pathology

	Upper GIT biopsy			
	Abnormal findings (*N*=49) *N* (%)	Normal (*N*=7) *N* (%)	X^{2*}	*P* value
Colon biopsy				
Mild activity	4 (50.0)	4 (50.0)		
Moderate activity	24 (88.9)	3 (11.1)	10.42 FE**	0.002
Severe activity	21 (100.0)	0		

*Chi square test. **FE: Fisher Exact test.

in colonoscopy. Patients with pancolitis have a significantly higher prevalence of UGIT symptoms (*P*=0.01).

Table 4 shows that higher disease activity in the colon diagnosed by histopathology is significantly associated with more UGIT lesions diagnosed by histopathology (*P*=0.002).

Table 5 shows that there is a significant association between the activity of UC and the presence of helicobacter pylori) in gastric biopsies. Higher UC activity is associated with an increased degree of H. pylori associated inflammation with degree +1 and +2. Hence, the study suggests that there is a significant relationship between the presence of H. pylori and the severity of UC activity, with higher UC activity being more frequently associated with H. pylori presence.

Discussion

UC is a chronic, idiopathic inflammatory disease that affects the colon, most commonly affecting adults aged 30–40 years and resulting in disability [8,9]. It is characterized by relapsing and remitting mucosal inflammation, starting in the rectum and extending to proximal segments of the colon.

Previous reports show that 30–60% of patients with UC have proctitis, 16–45% have left-sided colitis, and 14–35% have extensive pancolitis in population-based studies [10]. UC can progress proximally in 10–19% of patients after 5 years, and in up to 28% of patients at 10 years, most patients with ulcerative colitis have a relapsing and remitting disease course with periodic flares [11]. In our study, our assessment of the mucosa by colonoscopy showed a mayo score for endoscopic severity calculated for the cases of the present study to determine the activity of the disease that most of the cases of the study (60.7%) have a Mayo score of 3 which is the highest score (Fig. 1). Mayo score 3 defined as severe disease with spontaneous bleeding, easy bleeding on touch and, multiple ulceration (Fig. 2).

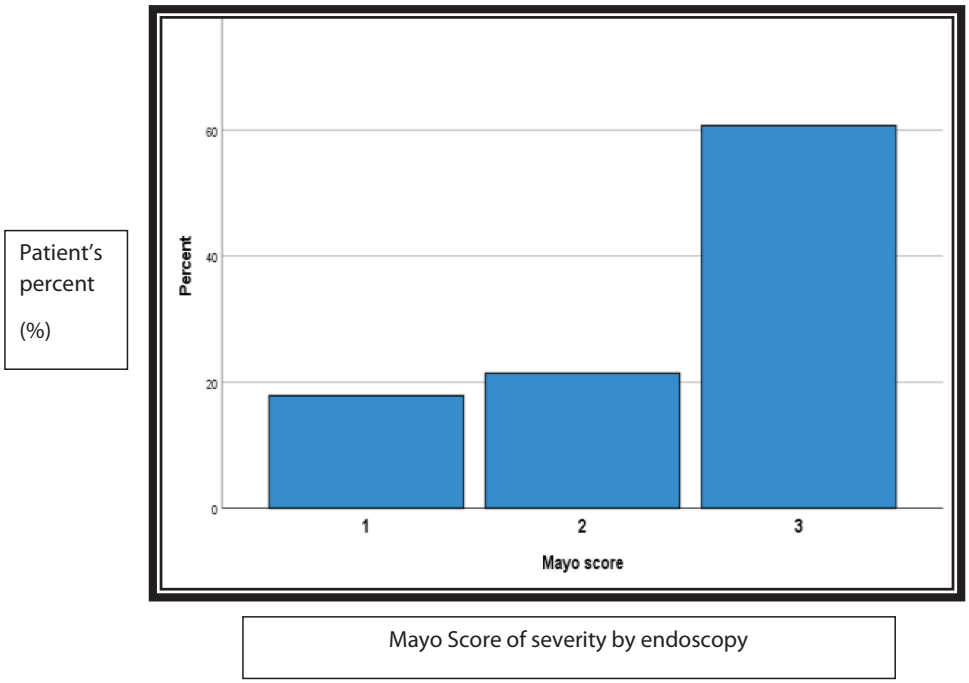
Emerging evidence supports that there are a variety of accompanying symptoms involving the UGIT in patients with UC upon macroscopic and microscopic analyses [12]. Several UGIT manifestations were reported in patients with UC such as eosinophilic esophagitis [13], gastroduodenitis [6], ulcers or UGIT inflammation [11].

Table 5 Relation between UC activity in histopathology and helicobacter pylori associated gastritis

	Colon biopsy				
	Mild activity (*N*=8) *N* (%)	Moderate activity (*N*=27) *N* (%)	Severe activity (*N*=21) *N* (%)	X^{2*}	*P* value
Stomach biopsy					
Free	4 (57.1)	3 (42.9)	0		
H pylori +1	1 (8.3)	2 (16.7)	9 (75.0)	17.61 **FE****	0.002
H pylori + 2	1 (12.5)	5 (62.5)	2 (25.0)		
Nonspecific gastritis	2 (6.9)	17 (58.6)	10 (34.5)		

*Chi square test, **FE: Fisher Exact test.

Figure 1

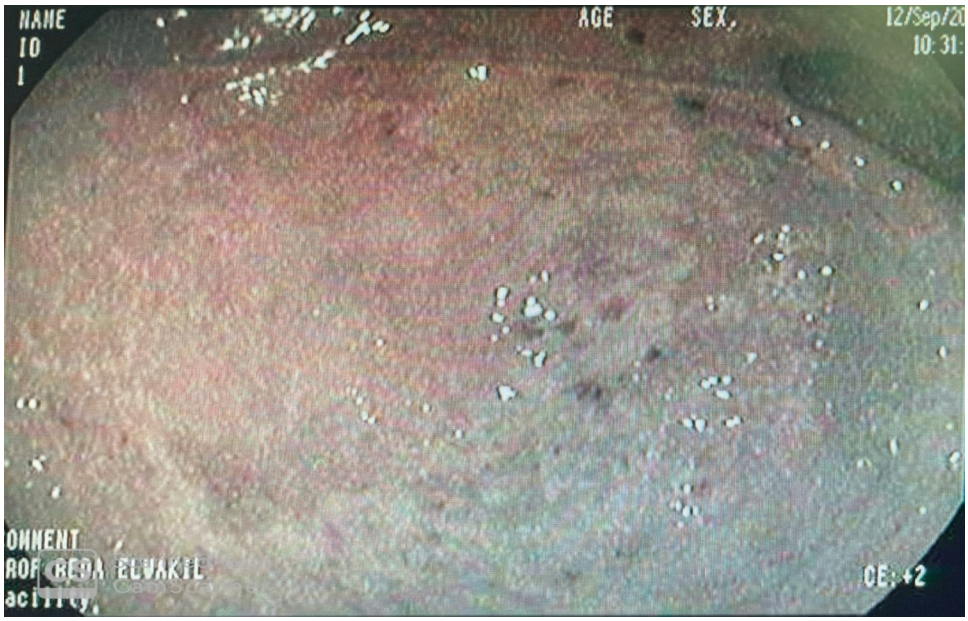


Mayo Score distribution among the patients of the study.

In addition, the positive rate of UGI endoscopy in asymptomatic individuals was lower than that in symptomatic patients. The reported clinically significant UGI lesions include multiple erosions, granular changes, bamboo joint-like appearance, white spots, friable mucosa, ulcer, and purulent deposits during EGD [5,14]. On the other hand, Rubinestein *et al.* reported that multiple erosions in the UGIT are extremely rare (0–3%) in UC patients [15].

In the current study, we found that the mean age of the patients was 36.64 years which is in correlation with Cosnes *et al.* who reported that although there has been

Figure 2



Endoscopic picture of a 60-year-old newly diagnosed patient with ulcerative colitis not on treatment showing severe pan colitis in the form of areas of extensive ulcerations of variable size (thin arrows) with mucosa easily bleeding on touch (thick arrows).

an increased incidence of UC in different age groups, yet the majority of patients with UC in recent decades are in the age group of 30–40 years at diagnosis [11]. Prideaux *et al.*, and Ungaro *et al.* indicated that the peak age of disease onset is between 30 and 40 years [16,17]. In addition, the mean age at diagnosis for UC is 32.7 (95% CI: 30.3–35.1) based on the results of a systematic review and meta-analysis conducted to study the epidemiologic profile of the inflammatory disease in Eastern Mediterranean Region [18].

Although UC is less common in children, recent studies have shown that the number of UC cases has increased in paediatric patients and adolescents. In Scotland, for example, in recent years, an increased incidence of UC in the age group under 16 years was observed. Comparing the periods 1990–1995 and 2003–2008, incidence rates increased from 1.59/100 000 per year (95%CI: 1.28–1.94) to 2.06/100 000 per year (95%CI: 1.70–2.47; P=0.023) [19].

Certain publications indicate that a second incidence peak occurs in an older age group [20]. A study by Souza *et al.* [21] in south-eastern Brazil showed that there was a trend toward a second peak of new hospital admissions due to UC in the age group of 60–69 years old. However, there is no consensus in the literature regarding the existence of this second peak [11]. Although, the current study reported an age range of 19–65 supporting the theory of a second peak among old age in UC patients.

In the present study, the number of males were 30 (53.6%) while the number of females were 26 (46.4%). Most UC studies have shown a male predominance or an equal distribution between genders [17]. In the past, Italian investigators have even suggested that polymorphisms in an enzyme involved in the signal transduction of insulin (cytosolic low-molecular-weight protein tyrosine phosphatase) could increase predisposition to the development of CD in women and of UC in men [22]. However, this hypothesis was refused in a more recent study by a group of Spanish investigators [23].

In the current study, two (3.6%) cases showed extraintestinal manifestations (Joint and skin manifestations) which is lower in comparison to reports from some previous studies. Rawal *et al.* [24] reported that the prevalence of extraintestinal manifestations in their patients were 7.92%. A variable percentage of patients may also have abnormalities in other organs and systems. Joint, skin, liver, eye, and hematologic manifestations are common in patients with UC. Extraintestinal manifestations have been shown to be associated with a greater extent of disease and a worse prognosis [25].

Lakatos *et al.* [26] conducted a study on 619 patients with UC who were followed for 25 years. The authors concluded that the presence of extraintestinal manifestations was associated with greater disease extent. In paediatric population, the presence of extraintestinal manifestations in paediatric patients with UC increases the risk of colectomy [27]. The low number of extraintestinal manifestations in the present study in comparison to other studies may be explained by the low number of recruited patients in the current study.

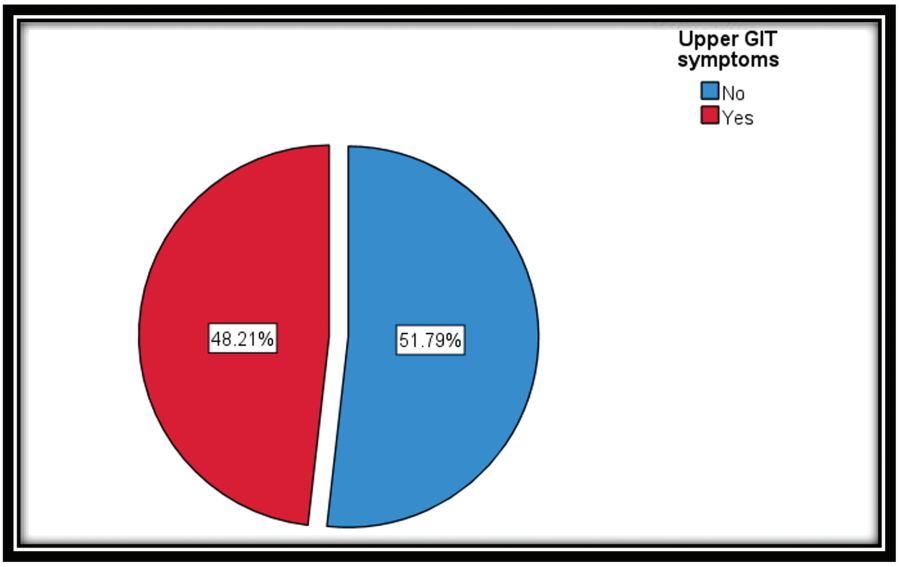
In the present study, 78.6% of the cases had more than six motions per day, 82.1% of the cases had bloody motions, 100% of the cases had mucoid motions, 26% of the cases had bleeding per rectum, 51.8% of the cases had abdominal pain, 58.9% had tenesmus while 23.2% reported constitutional symptoms. The mean hemoglobin content in the present study cases was 10 gm% (anemic level). These findings are in accordance with those reported by Ford *et al.* as they concluded that a combination of anemia, weight loss of more than 5 kg in the past year, and having more than four bowel movements daily, had a positive likelihood ratio of 14.6 for diagnosis of UC, while patients with only anemia and more than four daily stools had a likelihood ratio of 7.87 [28].

In the present study, 48.2% of the cases reported upper gastrointestinal symptoms (Fig. 3).

The study has provided UGIT symptoms, UGIT endoscopic lesions, and histopathological findings in the biopsies taken hence, proving the positive clinical, endoscopic, and histopathological findings in adult patients with UC. The results of the present study showed that UGIT affection was diagnosed collectively in 96.4 and 87.5% of the cases by endoscopy and biopsy respectively.

In the current study, 60.7% of the patients had oesophagitis/GERD as diagnosed by UGIT endoscopic examination while the results of histopathological examination of the biopsy samples for those patients taken during UGIT endoscopy revealed that 50% of the samples showed oesophagitis/GERD and 5.4% of the samples showed focal basal cell hyperplasia. These findings are in accordance with the results of other

Figure 3



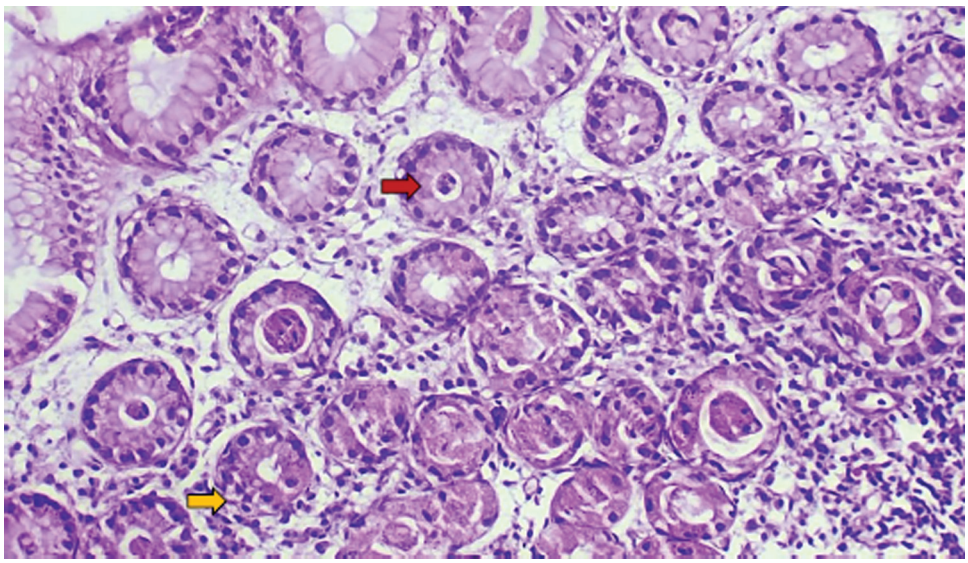
Upper gastrointestinal tract symptoms present in the study cases.

researchers in this area [29]. A study detected oesophageal ulcers described as being solitary punched-out ulcers frequently seen in the middle and lower oesophagus by endoscopic examination [30] and microscopically, only nonspecific inflammatory cell infiltration was demonstrated in all reported cases [31] but such oesophageal ulcers weren't detected in any of the current study cases. Regarding esophageal affection, the current study has mainly shown that 60.7% of patients had GERD upon E while microscopic evaluation of oesophageal biopsies showed that 50% of the cases had oesophagitis ie. GERD suggests the high frequency of esophageal.

affection which is in discordance with Sun *et al.* [31] reports that oesophageal lesions in UC are uncommon, nonspecific, and more associated with extraintestinal manifestations.

In the stomach, the current study revealed that 91.1% of the patients had gastritis by UGIT endoscopy while histopathological examination of the biopsy samples

Figure 4

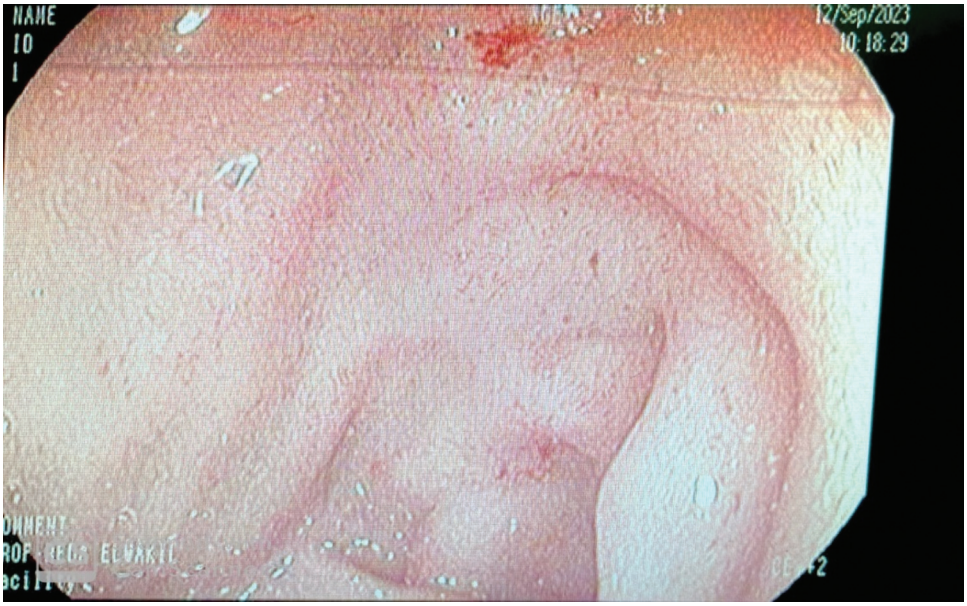


Gastric biopsy in a case of severe active ulcerative colitis showing increased inflammatory cells within the epithelium (pititis) (yellow arrow), neutrophils in glandular lumen (pit abscesses) (red arrow) (H&E ×200).

revealed that 53.6% of the cases had chronic nonspecific gastritis (Figs 4) and 33.9% of the cases showed chronic gastritis with H. pylori infection. On comparing these results to the results reported by other studies showing the occurrence of gastritis in 5–19% of patients with UC [6,32], the current study showed a higher frequency of stomach affection in UC cases. Adding to the previously mentioned lesions, studies have reported that focal enhanced gastritis (FEG) has been considered the most frequent UGIT inflammatory form in patients with UC, followed by gastric basal mixed inflammation and superficial plasmacytosis. FEG is characterized by localized accumulation of lymphocytes, neutrophils, and macrophages in at least one pit, neck, or gland of the adjacent lamina propria [33]. This focal inflammation pattern can be observed anywhere in the mucosa from the basal para-mucosa of the muscular to the superficial subepithelial layers, with the occurrence of a single focal point or as multiple focal points. Scholars have also found that FEG could be seen in up to 20.8% of children with UC [34]. Basal and patchy inflammation is the second pattern of gastric inflammation, which includes a loose mixture of lymphocytes, eosinophils, mast cells, and plasma cells, these cells were found in the lamina propria between the deepest glands and the muscularis mucosae [33]. Moreover, superficial plasmacytosis is the third most common pattern of gastric inflammation, it is regarded as a diffuse band of plasma cells in the superficial lamina propria adjacent to the pits and necks. Furthermore, chronic, diffuse gastritis also seems to be a frequent feature in gastric biopsy specimens from UC individuals. Notably, erosions or ulcers complicated with UC are infrequent and granulomas are always absent. Regarding the gross and endoscopic features, UC-related gastritis is characterized by diffuse granular or brittle mucosa, as well as aphthous lesions which are different from the inflammatory cells observed in H. pylori-relevant gastritis and gastric CD [31].

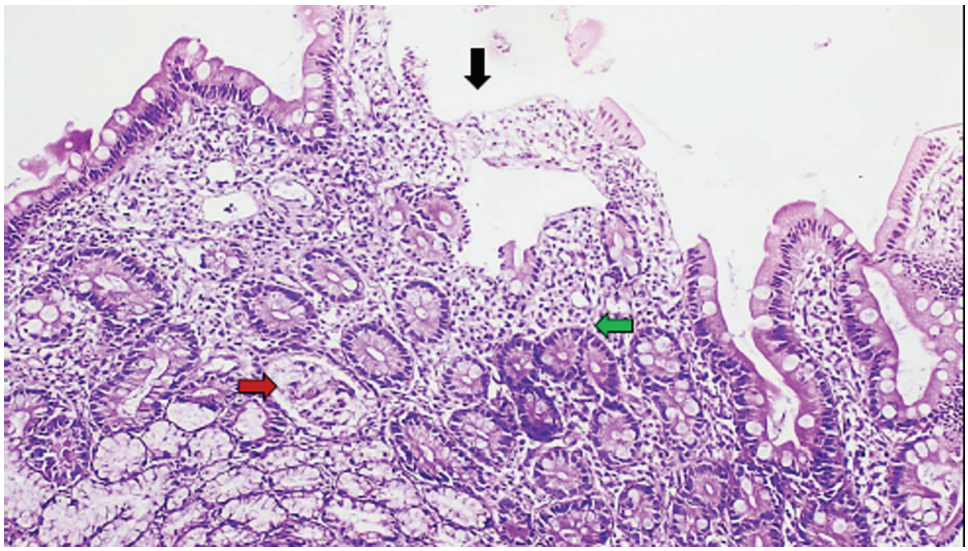
In the duodenum, the current study showed that 78.8% of the cases had duodenitis on duodenoscopy (Fig. 5) while histopathological examination of biopsies taken from the duodenal mucosa showed chronic non-specific duodenitis in 85.7% (Fig. 6). These results are in accordance with several studies that reported the occurrence of chronic duodenitis associated with UC [6,15,32]. The previous literature has mentioned a unique type of UGIT inflammation in UC individuals which is diffuse chronic duodenitis, which occurs in 10% of duodenal biopsy of the patients, Moreover, the reported endoscopic findings in symptomatic patients are diverse and include diffuse oedema, granular, fragile mucosa, and ulcers, while the microscopic characteristics of duodenitis associated with UC include a dilated mucosa with diffuse inflammatory infiltration of monocytes and neutrophilic inflammation, glandular deformation, and erosion or ulceration. Unfortunately, it was mentioned that duodenitis associated with UC is infrequently identified due to its nonspecific capillary and microscopic features as well as its overlap with

Figure 5



Upper gastrointestinal tract endoscopic picture for the same patient showing moderate duodenitis with edematous mucosa and multiple pinpoint submucosal hemorrhages (thick arrow) with easily bleeding mucosa on touch.

Figure 6



Duodenal biopsy in a case of severe active ulcerative colitis showing focal ulceration (black arrow), increased inflammatory cells in glandular lumen (crypt abscesses) (red arrow), with crypt distortion and focal goblet cell depletion (green arrow) (H&E ×100).

celiac disease, peptic duodenitis, and drug-related duodenitis. Nevertheless, clinical consciousness should be considered in the diagnosis, especially if the patients have accomplished previous colectomy for widespread and severe colitis or if the patients also experience concomitant pouchitis or enterocolitis [31].

Hori *et al.* studied gastroduodenitis associated with UC (GDUC) describing its prevalence and characteristics stating a criteria for diagnosis by endoscopic and histological comparisons with non-UC controls concluded that more aggressive UC such as active pancolitis may be related to the development of GDUC [6]. On the other hand, Kato *et al.* discussed that so far there is no consensus regarding the definition of upper gastrointestinal involvement in UC to date [5].

The study used statistical tests to find a relation between UGIT symptoms and disease extent in colonoscopy with the result being of statistical significance (P=0.01) meaning that patients with pancolitis have a significantly higher prevalence of UGIT symptoms. This finding is in discordance with the results of the study of Kato *et al.* as they found no association between the extent of colitis and the development of upper gastrointestinal manifestations. However, in their study, EGD and colonoscopy were not performed at the same time and information regarding the disease extent at the time of EGD examination was not available. On the other hand, in the present study, upper GIT endoscopy and colonoscopy were performed to all patients simultaneously in the same session by the same endoscopist which may explain the difference between the results of the current study and the results of the study of Kato *et al.* [5]. Similarly, the study used statistical tests to find a relation between UGIT findings detected by histopathology and UC disease activity assessed by histopathology showing a statistically significant relation (P=0.002), meaning that higher disease activity in the colon diagnosed by histopathology is significantly associated with more UGIT lesions diagnosed by histopathology and this agrees with Hisabe *et al.* conclusion stating that severe gastritis or gastroduodenitis is usually seen in subjects with extensive colitis, ileoanal pouchitis, or pancolitis [32].

In the present study histopathological examination of gastric biopsy taken from the patients with UC revealed that H. pylori was present in 33.93% of the samples which is a quite low level in comparison to the prevalence of H. pylori reported by other researchers in gastric biopsies in Egyptian patients as Metwally *et al.* detected H. pylori by histopathological examination of gastric biopsies in 90.3% of their dyspeptic patients. [35]. Also, other studies reported that the prevalence of H. pylori in Egypt was as high as 88.7%. The cause of the difference between the results of the present study and the results of other Egyptian researchers may be explained by the small number of patients examined in the current study. Metwally *et al.* studied 134 patients, Enany *et al.* studied 134 patients, and Gad *et al.* studied 365 patients versus 56 patients

studied in the current study [35–37]. To be noted, the results of the present study found a positive association between the severity of UC and the presence of H. pylori in gastric biopsies.

The strength of the present study lies in being the first research that explored the UGIT manifestations in Egyptian UC patients. The results of the study proved a statistically significant association between UC and the presence of clinical, endoscopic, and histopathological changes which provides a rational for conducting larger studies in the future on Egyptian UC patients to confirm the findings of the current study.

The limitation of the current study is that it is a descriptive uncontrolled study, it is a single-centre study, and a small number of cases recruited in the study.

Conclusion

The clinical, endoscopic, and histopathological manifestations of the UGIT are not uncommon in Egyptian UC patients. The current study has proved the association between UC and the presence UGIT symptoms as well as endoscopic lesions in the esophagus, stomach, and duodenum. These findings were confirmed by histopathological examination of mucosal biopsies taken from the esophagus, stomach, and duodenum. The result of the current study provides a rational for conducting a controlled multicenter studies on large number of UC patients in the future on Egyptian UC patients to confirm the results of the current study.

Acknowledgment

The authors acknowledge Reda Elwakil Charitable Endoscopy Center for accepting to do free endoscopic procedures for some cases of the study.

Authors' contributions: Contributed to the study concept and design by W.A.H. and O.R.E. Acquisition of the data and performance of endoscopy procedures by O.R. E. Shared in acquisition and analysis of the data by E.M. B. Examined histopathology samples by O.H.N. All authors shared in writing and approved final manuscript.

Ethical considerations: The study was approved by the Research Ethics Committee of Faculty of Medicine Ain Shams.

University with approval number: FMASU MS 431/ 2023.

Financial support and sponsorship

Nil.

Conflicts of interest

The authors declare there are no conflicts of interest.

References

1 Isaacs KL. Upper gastrointestinal tract endoscopy in inflammatory bowel disease. GastrointestEndosc Clin N Am 2002; 12:451–462.

2 Ushiku T, Moran CJ, Lauwers GY. Focally enhanced gastritis in newly diagnosed pediatric inflammatory bowel disease. Am J Surg Pathol 2013; 37:1882–1888.

3 Kovacs M, Muller KE, Arato A, Lakatos PL, Kovacs JB, Varkonyi A, *et al.* Diagnostic yield of upper endoscopy in paediatric patients with Crohn's disease and ulcerative colitis. Subanalysis of the HUPIR registry. J Crohns Colitis 2012; 6:86–94.

4 Kuroki H, Sugita A, Koganei K, *et al.* Two cases of esophageal ulcer after surgical treatment for ulcerative colitis. Clin J Gastroenterol 2020; 13: 495–500.

5 Kato R, Iwamuro M, Hiraoka S, Takashima S, Inokuchi T, Takahara M, *et al.* Evaluation of the Upper Gastrointestinal Tract in Ulcerative Colitis Patients. Acta Med Okayama 2018; 72:105–113.

6 Hori K, Ikeuchi H, Nakano H, *et al.* Gastroduodenitis associated with ulcerative colitis. J Gastroenterol 2008; 43:193–201.

7 MD+CAC. Mayo Score/Disease Activity Index (DAI) for Ulcerative Colitis. https://www.mdcalc.com/calc/ 3675 /mayo-score-disease-activity-index-dai-ulcerative-colitis last accessed on September 23rd 2024

8 Høivik ML, Moum B, Solberg IC, *et al.* Work disability in inflammatory bowel disease patients 10 years after disease onset: results from the IBSEN Study. Gut 2013; 62:368–75.

9 Torres J, Billioud V, Sachar DB, Peyrin-Biroulet L, Colombel J-F. Ulcerative colitis as a progressive disease: the forgotten evidence. Inflamm Bowel Dis 2012; 18:1356–63.

10 Magro F, Langner C, Driessen A, *et al.* European consensus on the histopathology of inflammatory bowel disease. J Crohns Colitis 2013; 7: 827–851.

11 Cosnes J, Gower-Rousseau C, Seksik P, Cortot A. Epidemiology and natural history of inflammatory bowel diseases. Gastroenterology. 2011; 140:1785–1794.

12 Lemberg DA, Clarkson CM, Bohane TD, Day AS. Role of esophagogastroduodenoscopy in the initial assessment of children with inflammatory bowel disease. J Gastroenterol Hepatol 2005; 20:1696–1700.

13 Goldstein NS, Amin M. Upper Gastrointestinal Tract in Inflammatory Bowel Disease. Surg Pathol Clin 2010; 3:349–359.

14 Song J, Chang J, Kim C, Kim J, Han S, Kim T. The Endoscopic Findings of the Upper Gastrointestinal Tract in Patients with Ulcerative Colitis and Its Correlation with Disease Extent and Upper Gastrointestinal Symptoms. Gut Liver 2019:13.

15 Rubenstein J, Sherif A, Appelman H, Chey WD. Ulcerative colitis associated enteritis: is ulcerative colitis always confined to the colon? J Clin Gastroenterol 2004; 38:46–51.

16 Prideaux L, Kamm MA, De Cruz PP, Chan FK, Ng SC. Inflammatory bowel disease in Asia: a systematic review. J Gastroenterol Hepatol 2012; 27:1266–1280.

17 Ungaro R, Mehandru S, Allen PB, Peyrin-Biroulet L, Colombel JF. Ulcerative colitis. Lancet. 2017; 389:1756–1770.

18 Sanat ZM, Vahedi H, Malekzadeh R, Fanni Z. Epidemiologic profile of inflammatory bowel disease in Eastern Mediterranean Region (EMRO) countries: a systematic review and meta-analysis. BMC Public Health 2024; 24:1395.

19 Henderson P, Hansen R, Cameron FL, Gerasimidis K, Rogers P, Bisset WM, *et al.* Rising incidence of pediatric inflammatory bowel disease in Scotland. Inflamm Bowel Dis 2012; 18:999–1005.

20 Loftus CG, Loftus EV, Harmsen WS, Zinsmeister AR, Tremaine WJ, Melton LJ, Sandborn WJ. Update on the incidence and prevalence of Crohn's disease and ulcerative colitis in Olmsted County, Minnesota, 1940–2000. Inflamm Bowel Dis 2007; 13:254–261.

21 Souza MH, Troncon LE, Rodrigues CM, Viana CF, Onofre PH, Monteiro RA, *et al.* Trends in the occurrence (1980-1999) and clinical features of Crohn's disease and ulcerative colitis in a university hospital in southeastern Brazil. Arq Gastroenterol 2002; 39:98–105.

22 Bottini N, Gloria-Bottini F, Lucarini N, Ronchetti PG, Fontana L. Inflammatory bowel disease: Are there gender differences in the genetics of signal transduction? A preliminary study of cytosolic low molecular weight protein tyrosine phosphatase. Dis Markers 2000; 16: 163–166.

23 Teruel M, Martin JE, Gómez-García M, Cardeña C, Rodrigo L, Nieto A, *et al.* Lack of association of ACP1 gene with inflammatory bowel disease: a case-control study. Tissue Antigens 2012; 80:61–64.

24 Rawal KK, Shukla VP, Chikani S, Thakkar M, Ruparelia M, Chudasama RK. Prevalence of extraintestinal manifestations in ulcerative colitis and associated risk factors. Indian J Gastroenterol 2021; 40:477–482.

25 Farmer M, Petras RE, Hunt LE, Janosky JE, Galandiuk S. The importance of diagnostic accuracy in colonic inflammatory bowel disease. Am J Gastroenterol 2000; 95:3184–8.

26 Lakatos L, Pandur T, David G, Balogh Z, Kuronya P, Tollas A, Lakatos PL. Association of extraintestinal manifestations of inflammatory bowel disease in a province of western Hungary with disease phenotype: results of a 25-year follow-up study. World J Gastroenterol 2003; 9:2300–2307.

27 Gower-Rousseau C, Dauchet L, Vernier-Massouille G, Tilloy E, Brazier F, Merle V, *et al.* The natural history of pediatric ulcerative colitis: a population-based cohort study. Am J Gastroenterol 2009; 104:2080–2088.

28 Ford C, Moayyedi P, Bercik P, *et al.* Lack of Utility of Symptoms and Signs at First Presentation as Predictors of Inflammatory Bowel Disease in Secondary Care. American Journal of Gastroenterology 2015; 110:716–724.

29 Greenstein AJ, Janowitz HD, Sachar DB. The extra-intestinal complications of Crohn's disease and ulcerative colitis: a study of 700 patients. Medicine (Baltimore) 1976; 55:401–412.

30 Tominaga K, Tsuchiya A, Sato H, Mizusawa T, Morita S, Ishii Y, *et al.* Esophageal Ulcers Associated with Ulcerative Colitis: A Case Series and Literature Review. Intern Med 2020; 59:1983–1989.

31 Sun Y, Zhang Z, Zheng CQ, Sang LX. Mucosal lesions of the upper gastrointestinal tract in patients with ulcerative colitis: A review. World J Gastroenterol 2021; 27:2963–2978.

32 Hisabe T, Matsui T, Miyaoka M, Ninomiya K, Ishihara H, Nagahama T, *et al.* Diagnosis and clinical course of ulcerative gastroduodenal lesion associated with ulcerative colitis: possible relationship with pouchitis. Dig Endosc 2010; 22:268–274.

33 Lin J, McKenna BJ, Appelman HD. Morphologic findings in upper gastrointestinal biopsies of patients with ulcerative colitis: a controlled study. Am J Surg Pathol 2010; 34:1672–1677.

34 Sharif F, McDermott M, Dillon M, Drumm B, Rowland M, Imrie C, Kelleher S, Harty S, Bourke B. Focally enhanced gastritis in children with Crohn's disease and ulcerative colitis. Am J Gastroenterol 2002; 97: 1415–1420.

35 Metwally M, Ragab R, Abdel Hamid HS, Emara N, Elkholy H. Helicobacterpylori Antibiotic Resistance in Egypt: A Single-Center Study. Infect Drug Resist 2022; 15:5905–5913.

36 Enany SM, Abdalla S, Ali K. The prevalence of Helicobacter pylori and resistance patterns in dyspeptic patients from Ismailia. Egypt. Suez Canal Univ Med J 2005; 8:87–92.

37 Gad YZ, Hassan AM. CagA Helicobacter pylori seropositivity in asymptomatic, apparently healthy, young adult Egyptian food handlers. Euroasian J hepato-Gastroentrol 2012; 2:20–23.