Original Article

Epidemiological and Clinical Characteristics of Patients with Inflammatory Bowel Disease in Erbil City

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Abstract

Background: Inflammatory bowel disease (IBD) is comprised of two major disorders: ulcerative colitis (UC) and Crohn's disease (CD). There is an evident gap in the epidemiological and clinical features of the patients with IBD in this region. To know the epidemiological and clinical characteristics of patients with IBD at Erbil city, this study had been conducted. **Materials and Methods:** A cross-sectional study extended from October 2017 to May 2018; during this period, 64 patients diagnosed with IBD were included in this study. Details about the epidemiological and clinical characteristics of patients with IBD had been reviewed. **Results:** From 64 cases of IBD, 65.6% was UC and 34.4% was CD, the disease was more prevalent at young age group (20–29 years) in both UC (33.3%) and CD (36.4%), respectively. Patients were comparable in all of the general characteristics except for smoking ($P < 0.05$). Patients with UC significantly presented with abdominal pain ($P < 0.010$), bloody diarrhea ($P < 0.0001$), rectal bleeding ($P < 0.0001$), and anemia ($P < 0.045$), while the CD patients were more presented with diarrhea ($P < 0.0001$), vomiting ($P < 0.003$), and oral ulcer ($P < 0.044$). Patients with UC were using more oral contraceptive pills ($P > 0.05$). Up to 54.8% of patients with UC had active state of the disease, while the majority of CD patients (81.8%) were in remission. **Conclusions:** UC was more common than CD; IBD was more common in men. Patients with UC and CD were comparable in the majority of epidemiological and clinical features. The drug history has a significant association with UC and CD, and CD was more prevalent among smokers.

Keywords: Clinical characteristics, Crohn's disease, erbil city, inflammatory bowel disease, ulcerative colitis

Introduction

Inflammatory bowel disease (IBD) is a chronic inflammatory condition characterized by relapsing and remitting episodes. It is comprised of two major disorders: ulcerative colitis (UC) and Crohn's disease (CD); most patients have distinct features of either CD or UC, but approximately 5%–10% have features of both diseases (known as indeterminate colitis).[1] In UC inflammation limited to the mucosal layer of the colon, it is almost invariably involves the rectum and may extend proximally in a continuous fashion to involve other portions of the colon.[1] CD is characterized by transmural inflammation and by skip lesions. The transmural inflammatory nature of CD often leads to fibrosis and to obstructive clinical presentations that are not typically seen in UC. The transmural inflammation can also result in sinus tracts that burrow through and penetrate the serosa, giving rise to micro perforations and fistulae.[1,2] They are triggered by a several diverse environmental, genetic, and immunologic factors. The main two types (UC and CD) have similarities in the majority of clinical features and primarily affect small intestine and colon.[1] There is limited information on epidemiological, clinical, and predictors of these disease in developing countries in comparison with developed countries.[2,3]

IBD has been spread throughout the world, and it is a serious health issue to the affected geographic locations as the disease is severe and has several frequent recurrences.[4] The incidence of IBD is in the northern regions of the world and in white populations is higher. The IBD has been spread across various geographic differences.[5] The factors related to types of IBD whether geographical or genetic are unclear.[6]

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The investigators believe that etiopathogenesis could be considered as the risk factors of the disease, through the disease are not well understood. In addition, it is associated with abnormal immune response to the bacterial microbiota of the intestinal lumen. The genetic, socio-environmental, microbiological, and immunological perspectives could be considered as risk factors for the disease.[4] There is some evidence on the impact of genetic factors on the incidence of IBD;[4,7] therefore, it is valuable to investigate the incidence of this disease across different geographic locations. In particular that there is an evident gap about epidemiological and clinical features of IBD in this region and across the country. These kinds of efforts are so important as the evidence accent the increasing incidence of IBD in this region.[2,4,8] To know the epidemiological and clinical characteristics of patients with IBD at Erbil city, this study had been conducted.

Materials and Methods

A cross-sectional study extended from October 2017 to May 2018; during this period, 64 patients diagnosed with IBD at the Gastroenterology and Hepatology Department of Rizgary Teaching Hospital in Erbil city were included in this study. Informed consent was taken from all patients, in whom the diagnosis of IBD was confirmed by clinical, laboratory, endoscopic, and histological examination. The patients were subjected to full history, clinical examination findings; questionnaire contains the patient demographic data, clinical feature, and family history of IBD. Drug history has been taken from all patients and specifically the following drugs: (nonsteroidal anti-inflammatory drugs [NSAIDs], oral contraceptive pills, and antibiotics) that are known to have association with IBD.[9-12]

The diagnosis of IBD types was established according to the clinical course of the diseases, endoscopic examinations, and biopsy findings.[13,14] The disease severity was determined as mild, moderate, and severe and disease activity as active or remission in accordance with the American College of Gastroenterology (Truelove and Witts' Severity Index for UC and CD Activity Index (CDAI) for CD).[15]

Statistical analysis

The descriptive purposes of the present study including the prevalence of UC and CD and their clinical features were examined in frequency and percentage. The differences of epidemiological and clinical features between UC and CD groups were examined through the Fishers' exact test or Chi-squared tests. The predictor of affecting by UC and CD was determined by univariate analysis of variance with taking into account the UC and CD as dependent variable. The null hypothesis was rejected in $P < 0.05$. The statistical calculations were performed using Statistical Package for the Social Sciences version 24 (SPSS, IBM Company, Chicago, USA).

Ethical considerations

The ethical approval of the present investigation was obtained from the Kurdistan Board for Medical Specialties in Erbil city. The consent was obtained from all patients before study participation. The participation was completely optional.

Results

In total, 64 cases of IBD, 65.6% was UC and 34.4% was CD. The UC/CD ratio was <1.90:1.0. Young age groups (20–29 years) were more prevalent, 14 (33.3%) were UC, and 8 (36.4%) were CD. Males (59.5%) were more than females (40.5%) in UC and also in CD males were more than females 59.1% and 40.9%, respectively. The study showed that two groups of patients with UC and CD were comparable in all of the general characteristics ($P > 0.05$) except smoking. The patients with CD were more likely to be smokers (31.8%) compared to their compartments in UC group (7.1%), as shown in Table 1.

As far as clinical symptoms concerned, the study showed that UC groups were significantly presented with abdominal pain ($P = 0.010$), bloody diarrhea ($P < 0.0001$), rectal bleeding ($P < 0.0001$), and anemia ($P = 0.045$), while the CD patients were more presented with diarrhea ($P < 0.0001$), vomiting ($P = 0.003$), and oral ulcer ($P = 0.044$). No any significant difference was found for weight loss ($P = 0.390$), fever ($P = 0.707$), Malena ($P = 0.344$), constipation ($P = 0.684$), tenesmus ($P = 0.735$), and perianal symptoms ($P = 0.344$), in similar to the general characteristics, the study revealed that two groups of the study were similar in the majority of clinical features except drug history ($P > 0.05$). Most of the patients in both groups receiving multi-drugs, the patients of UC group were receiving more OCP (2.4% vs. 0.0) and NSAIDS (21.4% vs. 0.0); however, the patients in CD were receiving more antibiotics (57.1% vs. 26.2%), as shown in Table 2.

Regarding colonoscopy of the patients diagnosed with UC showed that up to 36% disease was in rectum (proctitis), 31% in rectosigmoid (proctosigmoiditis), 16% in left side of colon, and 17% extensive colitis, as shown in Figure 1.

While colonoscopy of patients showed that 64%, 27% and 9% of them had CD in ileum, ileocolonic, and perianal, respectively, as shown in Figure 2.

As far as disease severity and activity concerned, up to 45.2% and 33.3% of patients with UC had mild an sever disease severity, respectively. Majority of CD patients had CD CDAI score of <150 (72.73%). The patients in UC were in active state of the disease (54.8%), while the majority of CD patients (81.8%) were in remission state, as shown in Table 3.

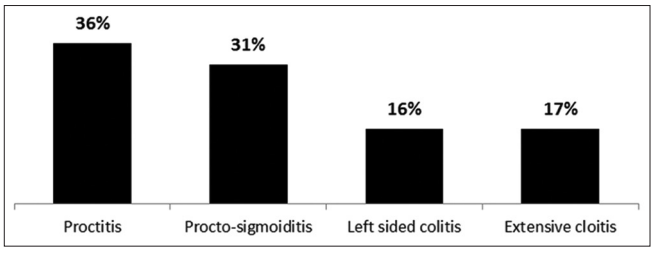

Figure 1: Colonoscopy findings of ulcerative colitis

Table 1: Differences of general characteristics between ulcerative colitis and Crohn's disease

Characteristics ($n=64$)	Ulcerative colitis ($n=42$)	Crohn's disease ($n=22$)	P (two-sided)
Sex			0.973*
Male	25 (59.5)	13 (59.1)	
Female	17 (40.5)	9 (40.9)	
Age groups			
10-19 years	3 (7.1)	4 (18.2)	0.588**
20-29 years	14 (33.3)	8 (36.4)	
30-39 years	10 (23.8)	5 (22.7)	
40-49 years	7 (16.7)	2 (9.1)	
50-59 years	6 (14.3)	1 (4.5)	
60 and over	2 (4.8)	2 (9.1)	
Marital status			
Married	28 (66.7)	10 (45.5)	0.101*
Single	14 (33.3)	12 (54.5)	
Ethnicity			
Kurdish	31 (73.8)	18 (81.8)	0.297**
Arabic	6 (14.3)	4 (18.2)	
Others	5 (11.9)	0 (0.0)	
Education			
No formal schooling	6 (14.3)	1 (4.5)	0.599**
Primary school	7 (16.7)	4 (18.2)	
Secondary school	15 (35.7)	6 (27.3)	
Institute/bachelor	13 (31.0)	10 (45.5)	
Postgraduate	1 (2.4)	1 (4.5)	
Residency			
Rural	2 (4.8)	3 (13.6)	0.329**
Urban	40 (95.2)	19 (86.4)	
Occupation			
Governorate employee	13 (31.0)	7 (31.8)	0.617**
Non-governorate employee	10 (23.8)	5 (22.7)	
Retired	0 (0.0)	1 (4.5)	
Home maker	4 (9.5)	1 (4.5)	
Unemployed (able to work)	15 (35.7)	7 (31.8)	
Unemployed (unable to work)	0 (0.0)	1 (4.5)	
Family income			
Low	2 (4.8)	0 (0.0)	0.357**
Middle	39 (92.9)	20 (90.9)	
High	1 (2.4)	2 (9.1)	
Smoking			
Yes	3 (7.1)	7 (31.8)	**0.044****
Ex-smoker	10 (23.8)	3 (13.6)	
Never smoke	29 (69.0)	12 (54.5)	
Alcohol consumption			0.289**
Yes	4 (9.5)	0 (0.0)	
No	38 (90.5)	22 (100)	

The bold numbers show the significant difference between ulcerative colitis and Crohn's disease. *Chi-squared and **Fishers' exact tests were performed for statistical analyses

The present study showed that drug history is the only predictor of affecting by UC or CD. The patients were taking multi-drugs were more likely to be diagnosed with UC, but those were taking antibiotics only were more likely to be diagnosed with CD ($P = 0.040$). In addition, CD was more prevalent among smokers ($P = 0.050$), as shown in Table 4.

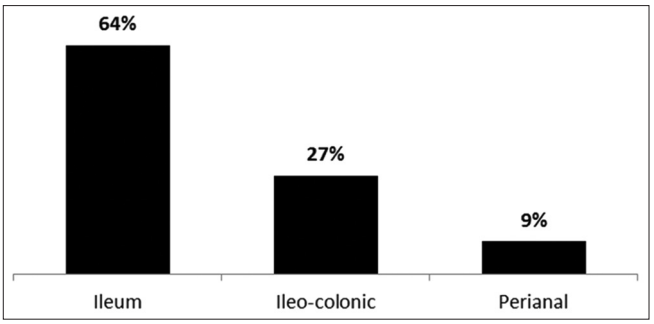

Figure 2: Colonoscopy findings of Crohn's disease

Discussion

The IBD has been investigated in other countries as well. In the present study, 65.62% were diagnosed with UC and the remaining 34.38% with CD. The studies showed that UC is more prevalent than CD in other countries. For example, a study done by Shirazi *et al.*[7] showed that of the total 200 patients, 183 patients (91.5%) were diagnosed with UC and 17 (8.5%) with CD. Another study in Iran showed a higher incidence of UC (98.08%) compared to 1.92% of CD.[16] Arantes *et al.*[4] found 56.26% for UC and 43.74% for CD in Brazil.

The study showed that the patients with CD were more likely to be smokers compared to the patients UC group. Smoking has been reported to be an independent risk factor for the development of CD. In addition, it has been associated with more severity and refractory disease.[17] The primary evidence on the smoking role on CD development backs to the UK study involved 82 patients with CD and their 82 matched controls.[18] Their study found that the patients with CD were more likely to smoke (relative risk: 3.5, 95% confidence interval [CI] 1.8–6.6) in comparison with their controls in UC group. In the present study, the odds ratio of smoking in CD was 1.48 (CI: 0.76–2.89) compared to OR: 0.80 (CI: 0.53–1.20) in UC group. A meta-analysis consisted of nine studies showed that smoking is responsible for OR of 1.76 (CI: 1.40–2.22) in the development of CD disease.

A French study was conducted in 3000 patients with CD assigned the smoking as light smokers (1–10 cigarettes per/day) and heavy smokers (>10 cigarettes/d). The study searched for the time percentage patients experienced with active disease and their need for immunosuppression.[19] The statistical analysis showed that nonsmokers had less time with active disease compared to light smokers and heavy smokers (33% vs. 38$ vs. 41% years; $P = 0.0001$, respectively. Moreover, the years of exposure to immune suppressants were lower in nonsmokers in comparison with light and heavy smokers (32% vs. 34% vs. 36%, respectively; $P = 0.001$.

Table 2: The difference of clinical presentation between ulcerative colitis and Crohn's disease

Clinical features (*n*=64)	Ulcerative colitis (*n*=42)	Crohn's disease (*n*=22)	*P* (two-sided)
Symptoms			
Abdominal pain	28 (66.7)	21 (95.5)	**0.010***
Diarrhea	10 (23.8)	18 (81.8)	**<0.0001***
Bloody diarrhea	29 (69.0)	4 (18.2)	**<0.0001***
Rectal bleeding	23 (54.8)	1 (4.5)	**<0.0001***
Vomiting	0 (0.0)	5 (22.7)	**0.003****
Weight loss	18 (42.9)	7 (31.8)	0.390*
Anemia	11 (26.2)	1 (4.5)	**0.045****
Fever	7 (16.7)	2 (9.1)	0.707**
Malena	0 (0.0)	1 (4.5)	0.344**
Constipation	4 (9.5)	3 (13.6)	0.684**
Tenesmus	8 (19.0)	3 (13.6)	0.735**
Perianal symptoms	0 (0.0)	1 (4.5)	0.344**
Symptoms duration			
1-6 months	3 (7.1)	0 (0.0)	0.704**
7-12 months	3 (7.1)	1 (4.8)	
1-3 years	20 (47.6)	14 (66.7)	
4-8 years	12 (28.6)	5 (23.8)	
>8 years	4 (9.5)	1 (4.8)	
Eye presentations (conjunctivitis)	0 (0.0)	1 (4.5)	0.344**
Skin manifestations			
Angular stomatitis	2 (66.7)	0 (0.0)	0.086**
Erythema nodosum	1 (33.3)	0 (0.0)	
Oral ulcerations	0 (0.0)	3 (75.0)	
Multi presentations	0 (0.0)	1 (25.0)	
Musculoskeletal			
Ostepororis	1 (16.7)	NA	**Not computed**
Peripheral arthropathy	1 (16.7)		
Sacrolititis	4 (66.7)		
Liver and biliary			
Primary sclerosing cholangitis	2 (66.7)	NA	Not computed
Gall stone	1 (33.3)		
Family history of IBD	5 (11.9)	0 (0.0)	0.160**
Drug history			
OCP	1 (2.4)	0 (0.0)	**0.024****
NSAIDS	9 (21.4)	0 (0.0)	
Antibiotics	11 (26.2)	12 (57.1)	
Others	1 (2.4)	0 (0.0)	
Multi-drugs	20 (47.6)	9 (42.9)	

The bold numbers show the significant difference between ulcerative colitis and Crohn's disease. *Chi-squared and **Fishers' exact tests were performed for statistical analyses. NSAID: Nonsteroidal anti-inflammatory drugs, OCP: Oral contraceptive pill, IBD: Inflammatory bowel disease

Table 3: Differences of disease severity and activity between ulcerative and Crohn's groups

Severity categories (truelove and Witts')	Ulcerative colitis, *n* (%)	CDAI score	Crohn's disease, *n* (%)
Mild	19 (45.2)	<150	16 (72.73)
Moderate	9 (21.4)	150-220	3 (13.64)
Severe	14 (33.3)	221-450	2 (9.09)
		>450	1 (4.55)
Disease activity		Disease activity	
Active	23 (54.8)	Active	4 (18.2)
Remission	19 (45.2)	Remission	18 (81.8)

CDAI: Crohn's disease activity index

Table 4: Univariate analysis of variance for ulcerative colitis and Crohn's disease

Dependent variable: Ulcerative colitis and Crohn's disease

Source	Mean square	*F*	Significant	Partial η^2 (effect size)
Sex	0.008	0.040	0.842	0.001
Age group	0.058	0.311	0.904	0.035
Ethnicity	0.023	0.125	0.883	0.006
Smoking	0.605	3.219	**0.050**	0.130
Alcohol	0.164	0.872	0.356	0.020
Family history	0.457	2.435	0.126	0.054
Drug history (NSAID, OCP, antibiotics)	0.518	2.757	**0.040**	0.204

The bold number shows the significant difference. NSAID: Nonsteroidal anti-inflammatory drugs, OCP: Oral contraceptive pill

Apart from the smoking as an increasing risk factor for CD development, the smoking alters the natural history of the disease. Nunes *et al.*[20] conducted a cohort study in 3224 patients with CD based on the Spanish national IBD database (ENEIDA). They found that current patient smokers were less likely to have chronic disease compared to nonsmokers (7.9% vs. 10.9% $P=0.05$) and more likely to be in perianal disease stage (29.5% vs. 26.2% $P=0.05$). The impact of smoking in patients with CD and UC has been established in other studies as well. It has been shown to associate positively with CD and negatively with UC (as a protective factor).[9-11]

The patients in UC group had a more severe and active disease compared to their compartments in CD group. The possible change in disease activity in IBD types of the study as mentioned previously back to the protective effect of smoking natural history of the disease.[17]

This study showed that the drug history is a predictor of affecting by CD or UC. The patients in UC group were receiving more oral contraceptive pill (OCP) (2.4% vs. 0.0); NSAIDS (21.4% vs. 0.0) in contrast with receiving more antibiotics in CD group (57.1 vs. 26.2). It seems that environmental factors have an impact on the change in the intestinal microbiota. The Western diet, Vitamin D deficiency, and oral contraceptive have been implicated to have a role in the development of CD.[21] Some factors such as dietary alterations, gastrointestinal infections, and antibiotics use have a role in intestinal flora. Increased numbers of bacterial flow with diminished diversity has been shown to associate with the pathogenesis of CD in animal models.[12,22]

In the present study, we found that (11.9%) of UC patients had family history of the disease. In agreement with our study,

Childers *et al.*[23] found that family history of IBD was 12%, specifically 9% in UC and 2% in CD patients. While, Lin *et al.*[24] reported 3.6% in UC and 1.4% in CD patients.

Conclusions

UC was more common than CD; IBD was more common in men. Patients with UC and CD were comparable in the majority of epidemiological and clinical features and the rate of CD is increased in comparison to what is mentioned in literatures which are around 10%. The drug history has significant association with UC and CD, and CD was more prevalent among smokers.

Recommendations

Since this was hospital-based study with a small sample size, a larger study recruiting more patients with a longer duration of follow-up is necessary for better understanding IBD. In addition, the sample size was recruited from one setting facing the authors with difficulties to generalize the findings to the rest of the country or other settings.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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